THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

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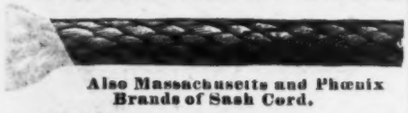
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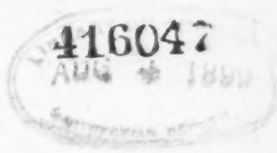

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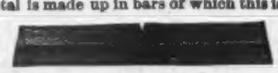
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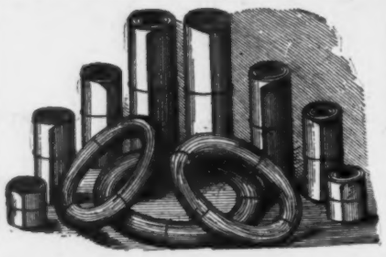

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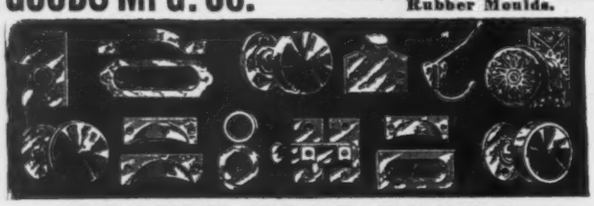

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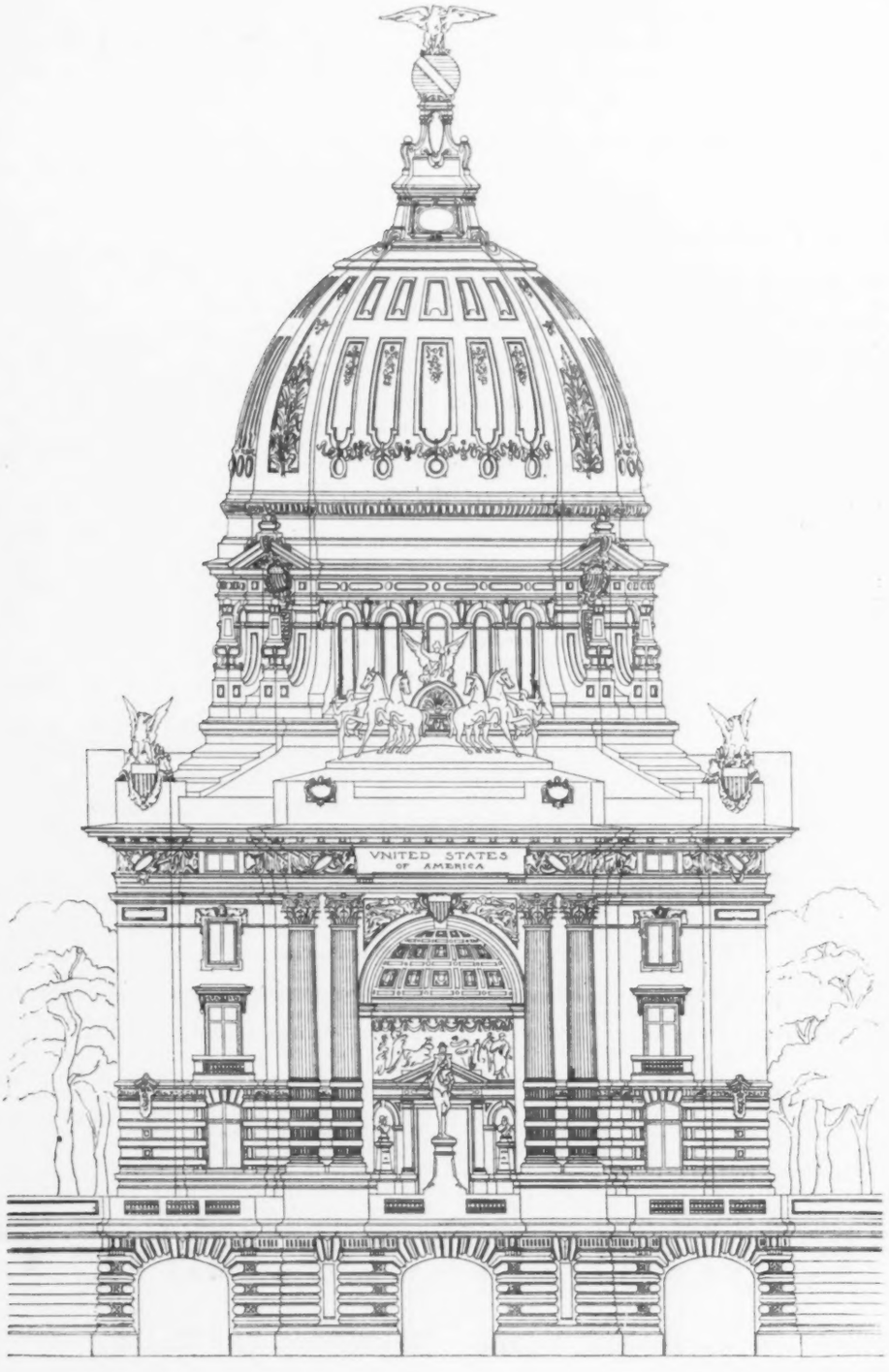
THE IRON AGE.

THURSDAY, AUGUST 3, 1899.

The United States Pavilion at Paris.

The United States National Pavilion is situated on Quay d'Orsay, on the left bank of the Seine, among the buildings of the great Powers. Its site is one of the best locations at the exposition. The plan is square, with a large central dome and rotunda which will be used as a general meeting place of Americans during the exposition. Three sides of the rotunda have rooms 13 x 36 opening out of it. That on the left of the main entrance will be used as a lounging room for gentlemen; that on the right for ladies, and that in the middle as a parlor for both ladies and gentlemen. The second story will be given to the States, where people who so desire can rest and register their names. The third story will be reserved for the private offices of the Commissioner-General and staff. The fourth floor will be given to the States and used in a similar manner to the second. The



THE UNITED STATES PAVILION AT THE PARIS EXPOSITION.

building is 85 x 90 feet and 160 feet high from the lower level. There will be two electric American elevators.

The style of the exterior of the building is classic, and while different in design from any of the buildings at the Chicago Fair, yet the feeling there prevalent has been kept. The main entrance is under a large portico which spans the esplanade, and under this every visitor who walks to the other National buildings will be obliged to pass. In the center arch of this portico, facing the river Seine, will be French's statue of Washington, while a bust of President McKinley will occupy a niche over the door. In the front of the building on the river bank will be a boat landing which will be highly ornamental as a classic barge. All the boats of the American line which connect with the American trolley system at Vincennes will make a landing at this pier.

The interior decorations have been the subject of particular consideration by the Commissioner-General, and an art commission has been appointed which will have entire charge of the mural decorations and artistic treatment of the interior of the building.

The National Bankruptcy Convention.

Referees in bankruptcy from various judicial districts of the United States met in Chicago on the 25th ult. to discuss the bankruptcy law, suggest amendments needed and to form a permanent organization for the purpose of urging Congress to adopt the changes desired by the referees.

A permanent organization was effected by the election of these officers:

President, Charles A. Hawley of New York.

First vice-president, James M. Olmstead of Massachusetts.

Second vice-president, Charles Turner of Alabama.

Third vice-president, Charles Baldwin of Utah.

Secretary and treasurer, William D. Fullerton of Chicago.

William H. Hotchkiss, chairman of the Committee on Rules and Organization, submitted his report, which was adopted. It provided that the organization be made a permanent affair and that annual conventions be held. Applicants for membership in the organization must be regularly appointed referees.

At the afternoon session Harlow P. Davock of Detroit read a paper on "Orders and Forms of Procedure." The speaker declared that the printed forms approved by the Supreme Court and now in use in bankruptcy proceedings were cumbersome and antiquated. They had been copied from the rules of the bankruptcy act of 1867 and were in no way suited for the methods of today.

W. H. Hotchkiss of Buffalo read a statement in which he reviewed the defects in the present printed forms in detail and suggested remedies. He had experienced much trouble in getting creditors to prove their claims in the manner provided by law. He said there was no way to allow claims that had not been proven within the time fixed by law. The rules he said should be changed so as to permit the filing of typewritten schedules.

Ex-Governor Crittenden of Missouri thought it would be well to have that section of the act of 1867 restored which declared persons involuntary bankrupts who defaulted in payment of commercial paper in 60 days. He also argued that men who lose their money gambling should not be accorded the benefits of the bankruptcy law.

Fred. A. Kable of Pennsylvania read a paper during which he said that "the referees, being officers of the courts, should not make recommendations for amendments to the law."

Sidney C. Eastman declared that it was the duty of the judges and officers of the courts to make such recommendations. He read letters from United States District Judges, Congressmen and Senators heartily commending the objects of the convention.

Charles B. Keller of Omaha was the first speaker on the second day, and in the course of an address on "Needed Amendments to the Act of 1898," said in part:

"No country successfully can maintain a bankruptcy law that does not have absolute control of the property and collection laws within its jurisdiction. An effort has been made in the act of 1898 to dovetail in the collection regulations of the different States, but it cannot be done with any degree of success because of the conflicting provisions of the various State statutes. The bankruptcy act of 1867, like its predecessors, went down to defeat. Every time an attempt has been made to secure amendments of a bankruptcy act the enemies of the principle have been aroused, with the result that the entire law has been wiped off the statute books. I greatly fear that the present attempt to perfect the measure will end by Congress repealing the entire act. The law as it stands is full of defects. Is it fair that the creditor should be stripped of every protection accorded him by the State statutes? That is precisely what is done by the new bankruptcy law."

W. H. Hotchkiss of Buffalo read papers on "Practice in Involuntary Cases" and "Partnership and Corporation Bankruptcies." He suggested an amendment to prevent a voluntary bankrupt from becoming an involuntary one through collusion.

D. Lloyd Jones of Milwaukee spoke on "Objections to Discharges," and ex-Governor Thomas C. Crittenden of Missouri led a discussion on a plan to give a wider discretion to judges and referees in the administration of the law

Sidney C. Eastman of Chicago read a paper on "Where Should the Trustee Sue?" He advocated the establishment of special courts for the trials of bankruptcy cases.

D. L. Grayson of Chattanooga, Tenn., discussed the subject of liens in connection with the administration of the act.

Hazen I. Sawyer of Keokuk, Iowa, read a paper on "Preferred Creditors."

The third day was largely devoted to organization business. The organization was made permanent under the name of the National Association of Referees in Bankruptcy. Provision was made for presenting to Congress proposed amendments to the law, after being passed upon by a committee. Annual conventions are to be held. The following committees were selected:

Executive Committee: William H. Hotchkiss, Buffalo, N. Y.; Sidney C. Eastman, Chicago; Charles M. Clapp, Omaha; D. L. Grayson, Chattanooga, Tenn.; W. R. Blair, Pittsburgh; H. T. Gurley, New Orleans; N. W. Littlefield, Providence, R. I.

Orders, Rules and Forms: Harlow P. Davock, Detroit; Charles Turner, Birmingham, Ala.; Charles A. Hawley, Seneca Falls, N. Y.

Involuntary Bankruptcy: Peter B. Olney, New York; J. B. Baskin, Louisville, Ky.; Harold Remington, Cleveland.

Liens, Preferences and Exemptions: Shelby Myrick, Savannah, Ga.; Thomas B. Wall, Wichita, Kan.; W. D. Stephens, Los Angeles, Cal.

Officers: D. Lloyd Jones, Milwaukee; F. Kable, Franklin, Pa.; W. B. Coles, St. Louis.

Administration of Estates: Albert Rabb, Indianapolis; C. A. Van Wormer, Scranton, Pa.; Hazen I. Sawyer, Keokuk, Iowa.

Discharges and Offenses: Roswell R. Moss, Elmira, N. Y.; O. A. Sperry, Washington, Ohio; W. F. Wickham, Richmond, Va.

The Virginia Iron, Coal & Coke Company.

George L. Carter, president of the Virginia Iron, Coal & Coke Company has announced the following as the personnel of the organization:

M. D. Chapman, vice-president, located at the Bristol, Tenn., office, will have all the powers of the president in his absence. T. P. Trigg has been appointed assistant to the president, and will under the general direction of the president or vice-president perform such duties as may from time to time be committed to his charge. Walter Graham has been appointed general superintendent, with headquarters at Bristol, and will have charge of operations of mines, furnaces, horseshoe, spike and rolling mills, foundries and machine shops, and will report to and receive instructions from the president or vice-president. Hereafter local superintendents will refer all matters relating to these departments to him. Joseph L. Hunter has been appointed mechanical and consulting engineer, with headquarters at Bristol, and will have charge of betterments and repairs of furnaces, mills, foundries and machine shops. C. O. Parker has been appointed civil and mining engineer, with headquarters at Bristol, and will report to and receive instructions from the general superintendent. Dayton H. Miller has been appointed auditor, and C. B. Anderson, assistant auditor, with headquarters at Bristol. William J. Brown has been appointed manager of sales department, with headquarters at Bristol. Frank P. Harmon has been appointed purchasing agent and manager of stores.

The W. H. Kemp Company, rollers and manufacturers of Aluminum Sheets and Foil, Aluminum Solder and Castings, &c., have removed into new quarters at 167 Spring street, New York, where they occupy two floors of a building 47 x 100 feet. The increase in the company's business made the removal to more spacious premises a necessity.

The Utilization of Furnace Gas for Power.—III.

The firm of John Cockerill of Seraing, Belgium, are engaged in building single cylinder motors, each of which is to produce 500 horse-power, the cylinders having a diameter of 1300 mm. and 1400 mm. stroke, making 80 to 90 revolutions per minute. These dimensions naturally call for very heavy fly wheels, but there is no doubt that it is important that a firm like that named, who possess great experience in the building of large engines, contribute to clearing the question to what limit it is possible to go with single cylinder four-cycle motors. The general arrangement of the plant is shown in Figs. 1, 2, 3, 4, 5 and 6.

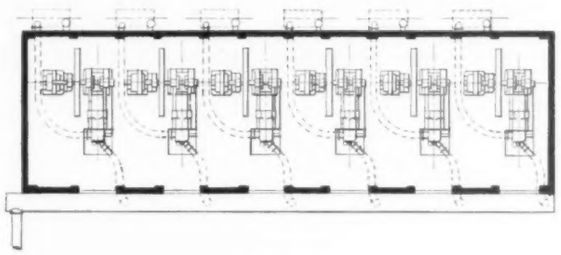


Fig. 2.—Plan.

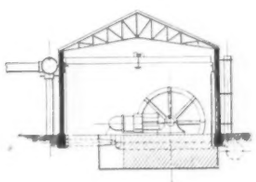


Fig. 1.—Side Elevation.

Electric Central Station at Seraing.—Six Simplex Motors at 500 Horse-Power.

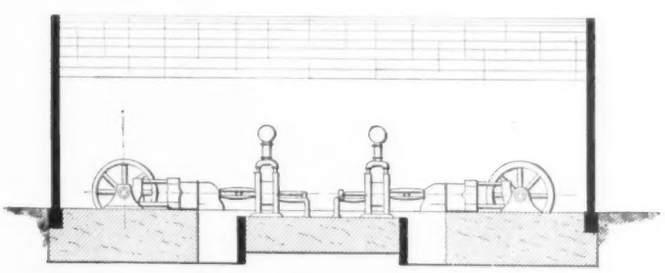


Fig. 3.—Side Elevation.

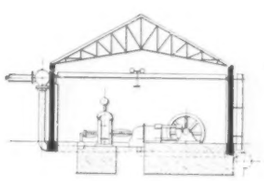


Fig. 6.—End Elevation.

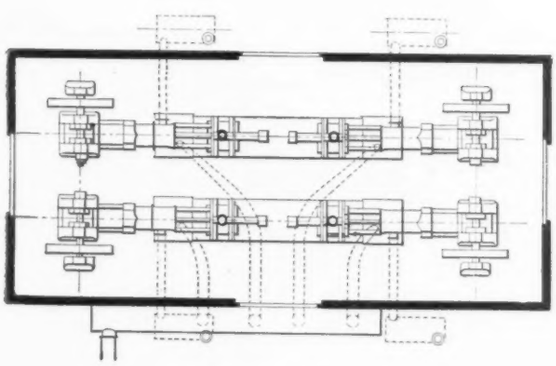


Fig. 4.—Plan.

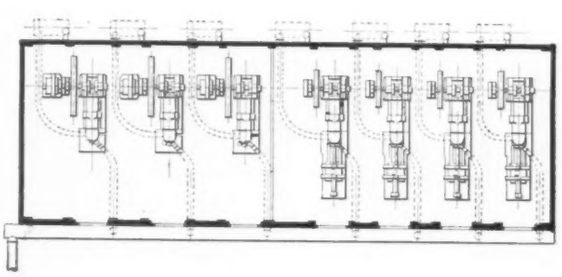


Fig. 5.—Plan.

Figs. 3 and 4.—Blowing Engine Plant at Seraing.—Four Simplex Motors at 500 Horse-Power.

Figs. 5 and 6.—Electric Central Station and Blowing Engine Plant at Seraing.—Seven Simplex Motors at 500 Horse Power.

The problem of large gas motors may also be attacked from another direction. Is it not possible to do work in one cylinder more frequently than with every fourth stroke? This is certainly possible. The first large blast furnace gas engine put into operation used the two-cycle system. It is the 600 horse-power engine built by the Berlin-Anhaltische M.A.G. It is built in accordance with the system of Oechelhaeuser, which has been running for some months at Hoerde. Its card is shown in Fig. 7. As will be seen, the compression, the explosion and the expansion of the mixture take place in the same manner as they do in the four-cycle motor. The essential difference lies in the method adopted to bring the mixture into the working cylinder and to remove the products of combustion from it. In the case of the four-cycle motor, this is done during two strokes. In this motor this work is concentrated at the outer dead center. After the expansion stroke the piston passes over slit openings in the cylinder walls, which it had covered before. These serve for the exhaust, and in this way release the exhaust openings. At the same time there is blown through an opening at the other end of the cylinder compressed air, so that all the products of combustion are forced out of the exhaust openings and are supplanted by fresh air. When this has occurred a mixture of air and gas flows through the same opening through which the compressed air entered until the piston in its return stroke again covers the slit openings. Then the compression takes place in the well-known manner. The compressed air which serves for sweeping the products of combustion from the cylinder is at Hoerde taken from the blast main. In order to form explosive mixtures and carry them into the working cylinder there must be a special mixture pump, which draws in the mixture and compresses it to about one-third atmosphere, so that at the proper time it may enter the cylinder rapidly. The essential difference between the two-cycle and the four-cycle motor may be explained by stating that in the four-cycle motor the explosive mixture pump and the working cylinder are combined in this manner: that the same cylinder acts during two strokes as the explosive mixture pump, and during the next two strokes as the working cylinder. In the case of the two-cycle motor these functions are separated, which gives the same working cylinder nearly double the capacity.

After Otto had introduced compression into the four-cycle motor, two-cycle engines were built in accordance with the principles described. But when the Otto patent expired, this method of construction disappeared almost totally in favor of the four-cycle motor. It must not be forgotten, however, that then only very small motors up

to 10 horse-power maximum were built, and that in this case the cylinders were small enough and were simple, so that the tendency was to build only one cylinder. For low powers the two-cycle system with its two cylinders becomes too expensive. In the case of large motors, however, where large dimensions of the working cylinder cause difficulties, it becomes advantageous to separate the mixture pump and the working cylinder. A final decision between the two systems is not dependent upon theoretical considerations, but only upon practical experience as to greater lightness in design, greater ease in building and lower cost of engine. It can only be said from a theoretical standpoint that the combustion and the working proceed as favorably in the two-cycle machine as they do in the four-cycle system, but that naturally in dividing these two cylinders the work of supplying the explosive mixture and expelling or ejecting the products of combustion is somewhat less than when these operations proceed in a single cylinder. It is possibly an advantage that in the two-cycle motor all the products of combustion are swept out by compressed air, while in the four-cycle motor a part of them remain behind in the space for compression. One point must be watched, and that is that none of the fresh explosive mixture escapes from the exhaust slits. It must be considered also that every engine system has its own individuality, so that the two different methods may exist side by side and for different cases in turn possess advantages.

The Oechelhaeuser system, which has been introduced at Hoerde, is characterized by the fact that the working cylinder is open at both ends and has two pistons. By one of them at the front end of the cylinder the exhaust slits are opened, while the other at the back end allows the fresh air and subsequently the fresh explosive mixture to enter into the cylinder through the slits. In this manner every moving valve on the working cylinder is avoided. As a result of the fact that two pistons take up the work, four times as much work is done as compared with the four-cycle cylinder with the same piston speed. It is true that this is secured at the cost of a double piston and through the use of a mixture pump. The ignition of the mixture is done electrically. The mixture pump, which lies behind the working cylinder, is double acting. When the speed is too high a part of the mixture escapes from one side of the pump piston to the other, so that a smaller quantity of the mixture flows into the working cylinder. The 600 horse-power motor is composed of two 300 horse-power engines lying at either side of the fly wheel, or the dynamo, so that with every stroke the engines does work. One side of the engine ran for three months and then both sides together for a month, day and night, with perfect satisfaction. It is true that a coupling between the engine and the dynamo proved too weak. It is now being replaced by a stronger one. This, however, has nothing to do with the system of the engine. A recent design of the builders is shown in Figs. 8, 9 and 10. This plant may run at a speed of 50 revolutions per minute. Referring to the drawings, it will be observed that a_1 and a_2 are two 1000 horse-power blowing engines, one being in reserve; b_1, b_2 and b_3 are dynamos driven by engines of 600 horse-power each, with a fourth in reserve; c_1 to c_8 a series of coke scrubbers; d_1 to d_{16} purifying boxes; e_1 and e_2 are auxiliary four-cycle motors of 40 horse-power each; f_1 and f_2 two gas suction fans, having a capacity of 4500 cubic meters per hour; g_1, g_2 and g_3 are three water pumps; h the switchboard; n_1 and n_2 small starting motors; k a gas holder of 3000 cubic meters capacity; l a water tower of about 150 cubic meters capacity, and m a cooling plant of about 200 cubic meters capacity per hour.

The firm of Koerting is now building a 500 horse-power engine, the design of which is in accordance with the general two-cycle system. The feature is that the single piston is double acting, so that work is done at every stroke, as in a steam engine. The same firm have recently built a double acting four-cycle motor, and have made experiments with it. It was shown that the motor may be driven with certainty when the piston has inside cooling, but when using the four-cycle system a double acting engine is more expensive than an engine of the same size with two single acting cylinders. This is not the case with the two-cycle engine since the valves at the working cylinder are avoided.

Until now furnace gas motors have only been used for driving dynamos. Their capacity for regulation and their uniformity of operation are entirely adequate. Now, however, the work has begun of building blowing engines readily driven by gas motors. The important point in view of the usual regulation of the blowing engine is whether it is possible to drive the gas engine at a low speed. I have made some experiments with an 8 horse-power illuminating gas engine whose normal speed was 220 revolutions per minute. I succeeded in lowering the speed to about one-half, or 130 revolutions per minute. It was shown that the gas consumption was not larger than under full load, and that ignition proceeded well and regularly. I did not succeed in carrying down the speed further because the regulator fluctuated too much in that case, since neither it nor the fly wheel was built for speeds so low. These experiments indicate that the operation of producing

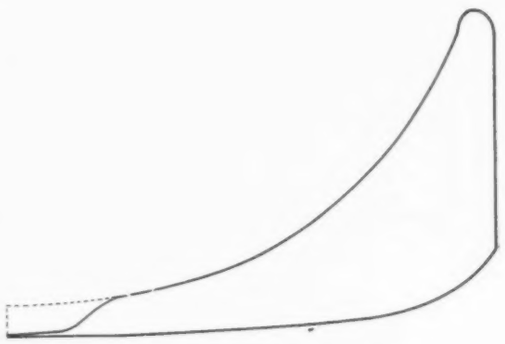


Fig. 7.—Card of Oechselhaeuser Motor.

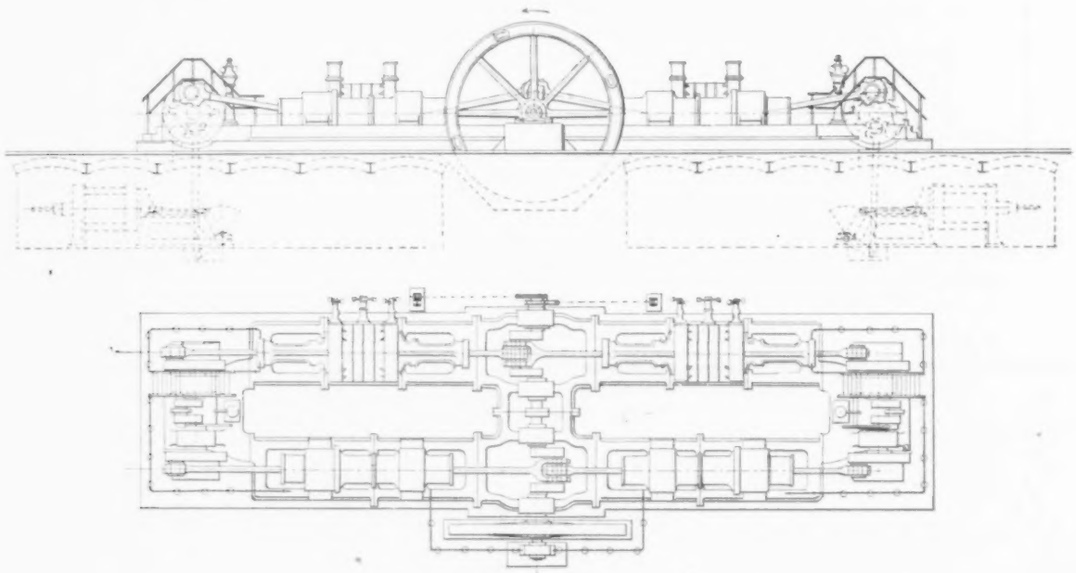


Fig. 10.—Blowing Engine Driven by Oechselhaeuser Gas Engine.

work in a gas motor proceeds as safely and nearly as advantageously at low speeds as it does at the speeds now usually employed. It is only necessary, therefore, to overcome the difficulties incident to regulation and to weight of fly wheel in order to build low speed gas engines suitable for running blowing engines.

The question finally arises whether the large gas motors in view of the high pressures or the temperatures developed in the working cylinder are suitable for steady and safe operation, whether they will not call for extraordinary repairs and fail in long runs. Recently I have examined a number of large gas engine

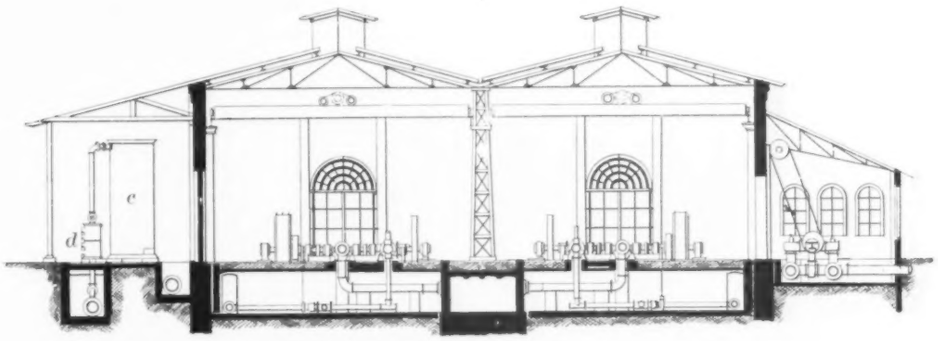


Fig. 9.—Elevation.

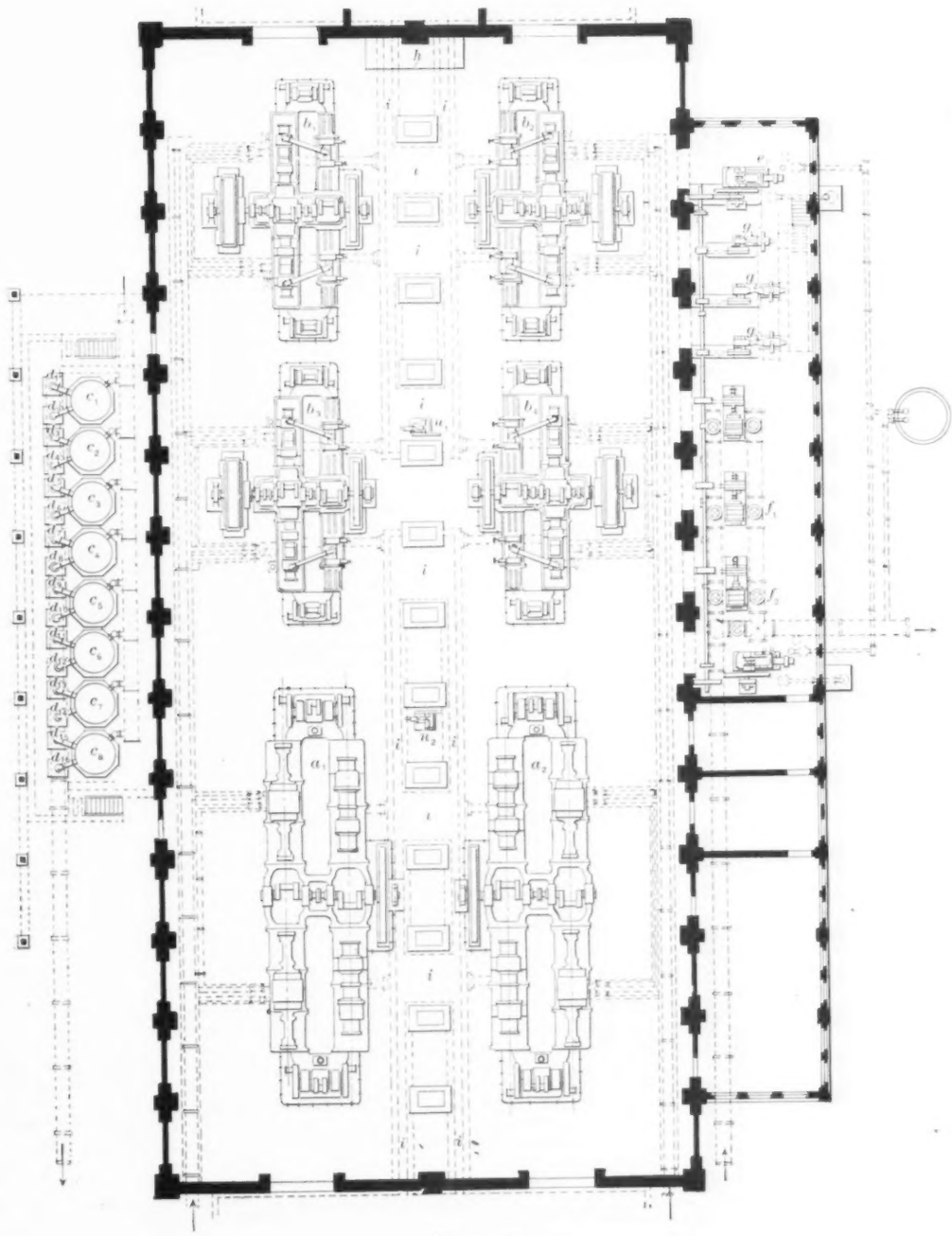


Fig. 8.—Plan.

Central Power Station Driven by Blast Furnace Gas.

plants which have been working for two, three and four years, and everywhere I was assured that the working is simple and perfectly reliable. The exhaust valves must be ground down from time to time, which, however, requires very little work. Every six months or every year it is necessary to take the piston out, and it has been shown at all the plants that the piston remains tight, and that, in fact, in time the piston rings work themselves in better and better. Experience thus far obtained seems to point to a long life of gas motors. The starting of the engines is now done in different ways, but simply and reliably. Experience has shown that the requirements of cooling water are only about 40 to 50 liters per horse-power hour.

When it is taken into account that at several works the furnace gas simply cleaned by dry methods is used then it is clear that the consumption of water is much less than with the condensing steam engine. The requirements of lubricating oil are said to be little higher than they are with steam.

In the discussion Director Muenzel of the Gas Motoren Fabrik Deutz of Deutz, Germany, took the ground that flue dust causes little trouble. At the Friedenshuette the furnace gas carries 30 per cent. of zinc dust. After two years' experimenting with a 16 horse-power motor, a plant of 1000 horse-power was projected, and of this two engines of 200 horse-power have been running regularly since January. Herr Muenzel also objects to abandoning the four-cycle system because it insures uniform and regular working. He submits two cards, the first, Fig. 11, indicator card of a 200 horse-power furnace gas engine, and the other, Fig. 12, a speed card from the shaft of a single cylinder gas engine running at 80 revolutions.

Dr. Muenzel combats the tendency toward large units, holding that a well designed single cylinder engine can be built up to 250 horse-powerr. He holds, too, that the cost is in favor of the single cylinder motor, when uniformity of running be taken into account.

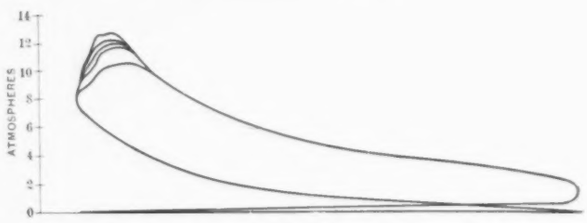


Fig. 11.—Card of 200 Horse-Power Deutz Gas Engine.

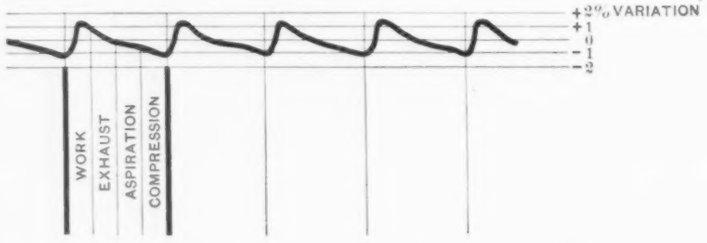


Fig. 12.—Speed Diagram of Gas Engine at 80 Revolutions.

The Boiler Manufacturers.

H. J. Hartley of W. Cramp's Sons Engine & Shipbuilding Company of Philadelphia, in his presidential address before the American Boiler Manufacturers' Association at Cleveland, discussed the position of the industry in the following terms:

At our last annual meeting, in the face of indicated returning prosperity to the boiler manufacturing branch of industry, I took occasion to vaguely call the attention of the members of the association to the importance of mutual protection. Since that time, not yet one year ago, what has taken place in the various industrial callings throughout the country looking to a betterment financially of their condition? Even in looking over those industries which are so closely allied with that of our own, such as the manufactures of materials that go into the product of our business, do we not see and realize that combinations have been effected for financial benefit and mutual protection to most of the branches that the boiler manufacturer depends upon for his supplies?

According to bids recently seen for some boilers, the boiler manufacturer himself seems still content to hammer away in the old beaten track, receiving for his labor little short of starvation prices, with a tendency to his financial detriment to continue in the old "cut rate" system, which results only to the benefit of his purchaser. In the face of these indisputable truths, is this not the time for the boiler manufacturers to wake up to the fact that they are not keeping abreast of the times in the matter of securing self protection and fitting remuneration for their honest labor?

When I see train loads of boilers, as I have seen lately, on the way to the seaboard to be from there shipped to South America, Russia and South Africa, I say to myself that if there ever was an advantageous time for the boiler manufacturer of this country to better his condition financially, that the time is certainly now.

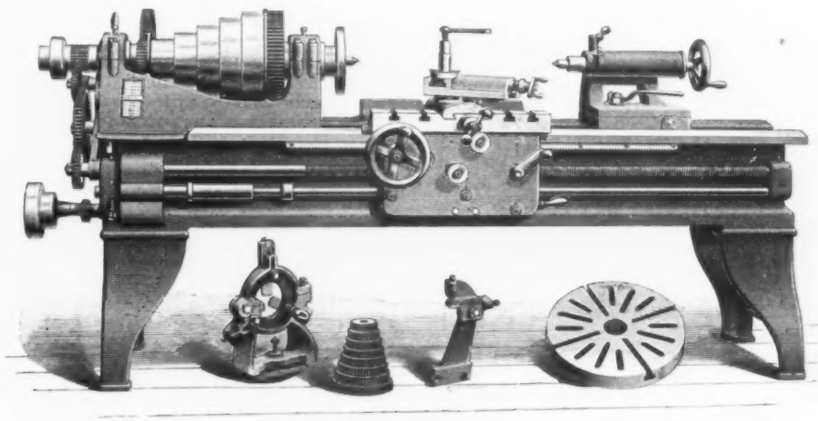
But the question confronting us is how to accomplish these very desirable results. Though many ways have been suggested from time to time without avail, the answer still is simply for the boiler manufacturers throughout the country to join the American Boiler Manufacturers' Association, and to make it protective on a basis similar to other trade associations of the same nature. There is the whole solution of the problem in a nutshell, needing no further argument.

That the boiler manufacturers of this country, producing as they do without foreign competition a highly protected and staple article, with a prospective market abroad, should not be making money, is solely blamable to the want of business co-operation among them.

The Rubber Tire Situation.

The consolidation which was attempted in the mechanical rubber goods trade early in this year failed to embrace as large a proportion of the factories as was intended, judging from the fact that of the $50,000,000 capital authorized only $18,000,000 has been issued. The failure of some of the leading concerns to enter the combination was due, without doubt, to a difference of views between the manufacturers and the promoters as to the value of the plants. There were some members of the trade who, while willing to make a sale of their business for cash, objected to taking stock certificates in payment. Of late, however, the Rubber Goods Mfg. Company appear to have strengthened their position, in respect of earning capacity, through what may be described as an unforeseen channel. The organization of the American Bicycle Company, under a New Jersey charter, with $40,000,000 capital, was intended originally to embrace tire making concerns, as well as makers of tubing, chains, saddles and other parts. The Rubber Goods Mfg. Company were already in the field to supply tires, and by what appears to have been a good stroke of business they succeeded in annexing to themselves the tire concerns had in view by the promoters of the bicycle consolidation. The latter is reported to embrace two-thirds of the productive capacity in the bicycle industry, and if the idea should be adhered to of buying from the consolidated rubber concern all the tires needed, the latter would have an important market ready to hand for the largest branch of their production, as now organized. It appears that the Rubber Goods Mfg. Company have acquired the plants, business and patents of all the leading types of bicycle tires other than the single tube, including the Dunlop, Morgan & Wright and Gormully & Jeffery tires. As for the single tube (or Tillinghast) patent, a decision is being awaited from the federal courts which shall determine its validity. In case the patent should be upheld, the single tube tire, whether for bicycles, carriages or automobiles, will be capable of being monopolized until 1910. Who will gain control of the monopoly it will be interesting to observe. The new acquisitions by the Rubber Goods Mfg. Company also embrace some contracts for the manufacture of solid vehicle tires—a business that is being developed largely, not only in the home trade, but also for export, since it appears that the tires of this class made in America

have shown better wearing qualities than any other. The Consolidated Rubber Tire Company of New York, incorporated with $10,000,000 capital, and the International Automobile & Vehicle Tire Company, with $3,000,000 capital, are identified respectively with the Electric Vehicle and the Auto-Truck or compressed air interests. The former are not a manufacturing concern, but were organized for the control of the Kelly-Springfield patents, the tires being made under contract by the rubber companies. If a considerable amount of such trade should go to the Rubber Goods Mfg. Company, in addition to the bicycle tire business, already assured to them, and particularly if the single tube tire patents should be sustained—thus preventing this branch of production from being opened to the world—the big concern would seem to be in a position to control to a large extent the production of tires, having the benefit of numerous patents to help in keeping down competition. This may prove a safer basis of consolidation than if it had been attempted to combine the whole production of mechanical rubber goods, with the possibility always existing of competing concerns springing into existence.



THE CINCINNATI LATHE.

The Cincinnati Lathe.

The new lathe built by Silk, Anderson & Co. of Cincinnati, Ohio, is designed for heavy work. In it there is plenty of metal, properly distributed, and the belt power and gearing are ample for heavy cuts. The swing over the shears is 19¼ inches, over the carriage 12 inches, and, with an 8-foot bed, the distance between centers is 4 feet 1½ inches. The spindle, of crucible steel, is provided with a hole 1 9-16 inches through it, and with large bearings, the front being 3 3-16 x 5½ inches, and the back 2⅝ x 4⅛ inches. The boxes are of phosphor bronze. The 5-step cone carries a 3-inch belt and varies in diameter from 5½ to 13 inches. It is back geared to give an even ratio beyond the larger diameter. The belt feed has four changes, 108, 62, 38 and 25 to the inch, the belt used being 1½ inches. From 2 to 20 threads, including 11½ pipe, can be cut with the gearing accompanying the lathe. The compound rest and power cross feed each have micrometer adjustments by 1-1000 inch. There is a friction feed to the cross feed, an automatic stop to the carriage and a reverse to the apron. Both the compound rest slide and cross feed slide are furnished with taper gibs. The lathe, having an 8-foot bed, weighs 2700 pounds.

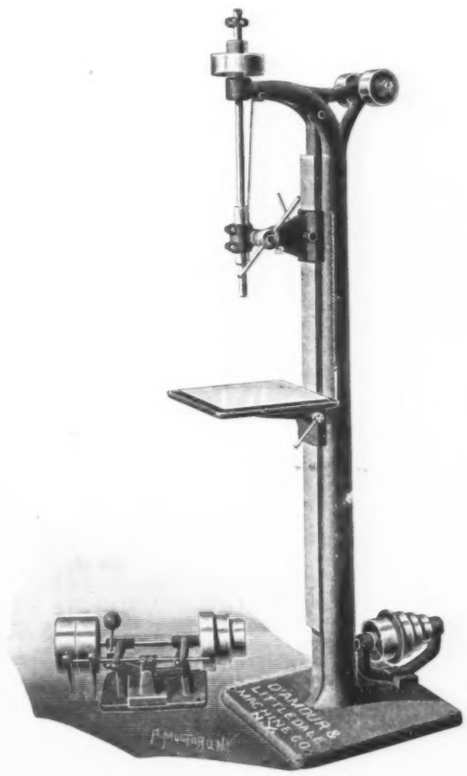
Dismantling Tin Plate Works.

The American Tin Plate Company are now dismantling the black plate mills at Baltimore formerly operated by the Stickney Iron Company; the mills at Locust Point, Maryland, formerly operated by the Baltimore Tin Plate Company; the mills at Brooklyn, N. Y., formerly operated by Somers Brothers, and the mills at Cleveland, Ohio, formerly operated by the Britton Rolling Mill Company. All of the works named had tin dipping plants connected with them. The company also advise us that they have secured control of the tin dipping plant at Canal Dover, Ohio, formerly operated by the American Tin Plate Machine & Mfg. Company, and will operate it in connection with their black plate mill at Canal Dover.

A striking example of the progress made in copper mining is furnished by the following from the annual report of the Calumet & Hecla Mining Company by Alexander Agassiz: "It may be interesting to compare the work we were doing in 1874 with the amount of work performed in 1899. Twenty-five years ago we were hoisting 800 tons a day from an average depth of 800 feet along the slope of our shafts, equal to 400,000 tons raised 1 foot high. The average for a day in April, 1899, was 5206 tons raised 3809 feet along the slope, equivalent to 12,362,250 tons raised 1 foot high, or 30 times as much work is done in 1899 as in 1874. In 1874 we employed 1616 men. In 1899 we employed 4706 men. The comparative cost of this work was as 30 is to 9.

The D'Amour & Littledale Sensitive Drill.

The spindle of the sensitive drill here illustrated is driven by a 1½-inch belt having three speeds, and has a cut steel rack and pinion feed and an adjustable stop to gauge the depth of holes. It is entirely relieved of belt strain and is counterbalanced by a weight inside the column, which makes it extremely sensitive and uniform to the touch. It is also provided with means for taking up wear. The table and spindle head are both adjustable on the slide. The column has a square base of ample size. The bracket carrying the driving cone pulley is securely bolted to the base, the object of this being to prevent vibration of the column when the machine is



THE D'AMOUR & LITTLEDALE SENSITIVE DRILL.

running. The main dimensions are: Greatest distance from end of spindle to base, 42 inches; from face of column to center of spindle, 7⅛ inches; throw of spindle, 3¾ inches; drill capacity, 0 to ½.

The Kelly Steam Plowing Outfit.

A large steam plowing outfit, designed and built by the O. S. Kelly Company, Springfield, Ohio, has been recently shipped to Honolulu. It consists of two very large traction engines each fitted with a winding drum, carrying 400 yards of 1-inch steel rope, two four-furrow balancing plows, capable of cutting each furrow 16 inches deep and 16 inches wide, and a two-horse portable water tank fitted with hand pump to supply the boilers when working in the fields. The engines are of the three-cylinder type, with triple throw crank shaft, same as the large overland freighting engines built by this company, the diameter of piston and length of stroke being 9½ and 16 inches respectively. These engines can be worked compound or high pressure. When compounding the middle cylinder only takes steam from the boiler, the two outside ones acting as one large low pressure cylinder to receive the exhaust steam from the middle one. For starting purposes an equalizing valve is connected in such a manner as to supply steam at a reduced pressure to the outside cylinders, all three pistons doing their share of the work. This feature is automatic, and requires no attention from the operator after being set. These plowing engines have more steel gearing attached than the overland freighting engines, one side having all the necessary gears to rotate the drum, the other side the connecting gears to propel the machine on the road. The propelling gear consists of a crank pinion, which is engaged or disengaged at the will of the operator with the first countershaft, having at its opposite end a bull pinion engaging a master gear, which is fixed in the customary manner to the main axle. The winding drum is 5 feet in diameter, and will hold 450 yards of 1-inch steel rope. It is suspended under the boiler between the front and rear wheels, and it fitted with an automatic coiling gear, which rises and falls with the rope as it moves up or down. It can be swung from one side of the engine to the other without readjustment. The upper flange of the drum is fitted with a steel gear 78 inches in diameter, which engages with a 10½-inch pinion, Fig. 3. This pinion is keyed to the lower end of a 4-inch vertical shaft running in adjustable bearings. The upper end of this shaft is fitted with two gear wheels of different diameters. A second 4-inch vertical shaft, fitted at its upper end with a miter gear, engages with a similar gear on the crank shaft. On the second shaft a sliding double pinion is placed so as to engage the large or small wheels on the first vertical shaft, or to be entirely free from either. These movements, made by means of a long lever, release the engine from the drum entirely or put the drum on to fast or slow motion, giving increased speed on the rope in one case and increased pull in the other. The speed of the rope varies from 200 to 300 feet per minute, while the dead pull may amount to 10,000 pounds. The driving wheels are 8 feet in diameter with 30-inch face, the front wheels 5 feet in diameter with 21-inch face. The wheel base is 16 feet.

The boiler is of the locomotive type. The sides and end of the fire box are tapered at the rate of ¼ inch per foot, giving a gradually increasing water space from the bottom of the mud ring up. The heating surface is 360 square feet. The tank has a capacity of 600 gallons of water and 1 ton of coal. The boiler pressure is from 160 to 180 pounds. The steering gear is placed above the winding drum, entirely away from the ground, and the lowest point of the drum pin is 11 inches above the ground, while the ash pan and tank are 17 inches clear at the lowest point. The total weight of each engine with winding drum of 400 yards of 1-inch wire rope is 50,000 pounds. The engine will give over 90 horse-power.

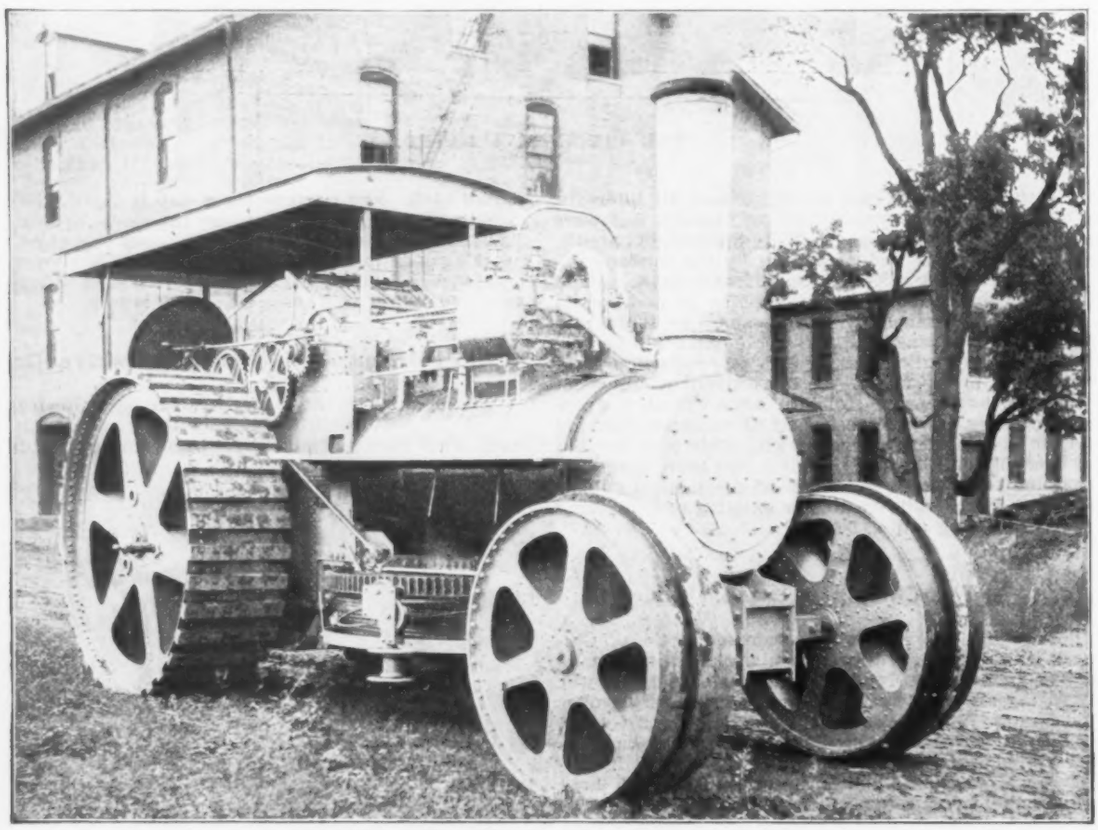


Fig. 1.—View Showing Connecting Gears for Propelling Machine on the Road.

THE KELLY STEAM PLOWING OUTFIT.

Moving a Court House by Rail.—House moving by rail is always interesting, but when a railroad loads up a "county seat" and carries it on a train without laying out regular traffic the achievement is worthy of record. This is an instance of responsible work done by the local division authorities of the Burlington & Missouri River Railroad, and the following is quoted from a letter to the *American Engineer and Railroad Journal* from an officer of that road: "The feat was that of transporting by rail the county seat of Hemingford, Box Butte County, Neb., to Alliance, Box Butte County, Neb., a distance of 19 and a fraction miles. By popular vote the county seat was changed some months ago from Hemingford to Alliance. The building was placed on four 60,000-pound capacity trucks. Two loaded coal cars were in front and the same

number back of the house. These coal cars served the purpose of anchors to which the building was guyed by ropes. Heavy bridge timbers were secured to the lower part of the court house and supported on the trucks. One difficulty that had to be provided for was that of passing trains. To avoid any inconvenience the first part of the journey was made from Hemingford to Berea, the outfit being allowed to remain for the night on the main track, and the through trains east and west ran around it on yard tracks at that point. The following morning, after the trains had all passed, the court house continued its journey to Alliance, reaching there about noon, June 30.

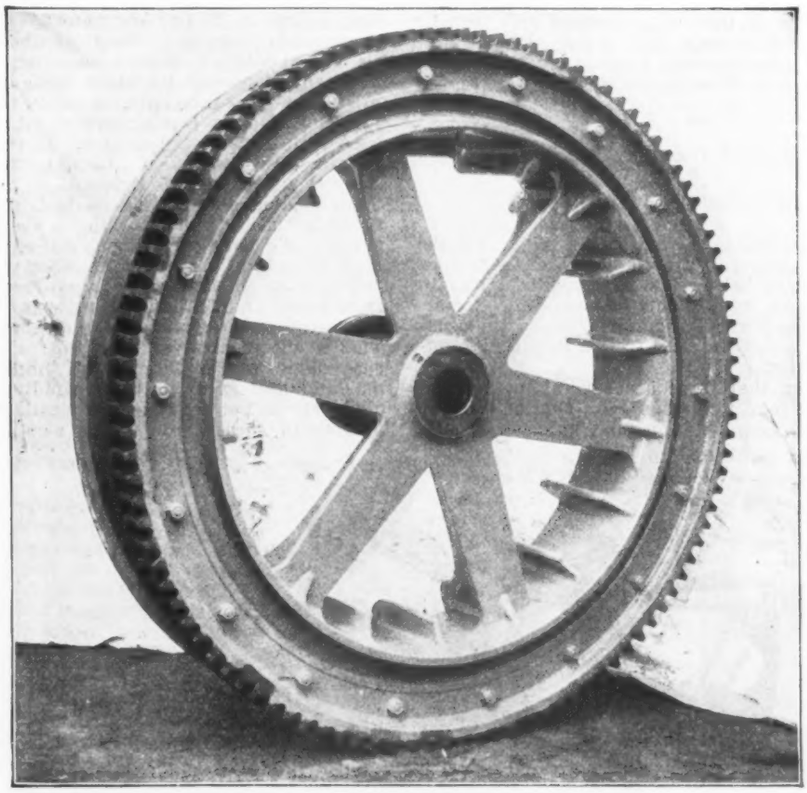


Fig. 2. The Winding Drum.

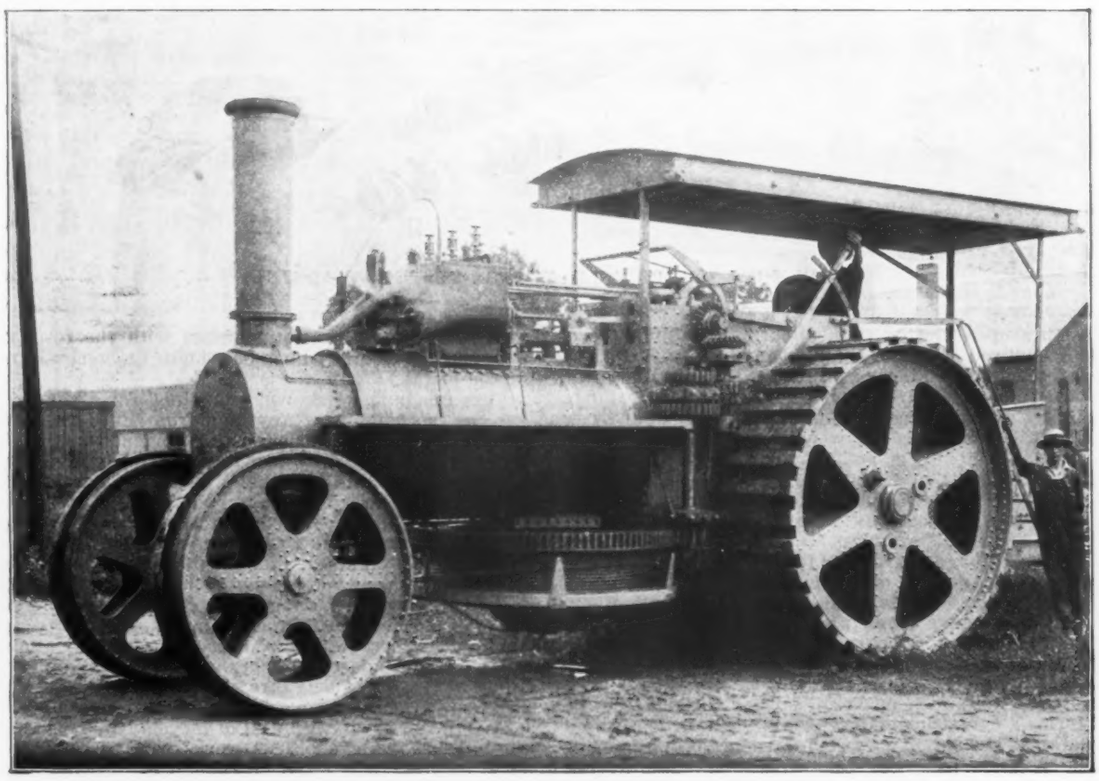


Fig. 3.—View Showing Drum Gearing.

THE KELLY STEAM PLOWING OUTFIT.

In noting the speed it was observed that country wagons, in order to keep up with the speed of the building, had to move along at a trot, the speed being about 6 miles per hour. Several of the cuts had to be widened in order to let the corners of the building pass. It was through loose earth and not much of a job. The Hon. J. Sterling Morton happened to be in that vicinity when this transfer was made and dryly remarked 'that it was the first time he ever saw a court house going to court.' The building weighed about 70 tons and its dimensions were 34 x 48 feet and 45 feet high."

Strength of Bicycle Tubes.

BY OBERLIN SMITH.

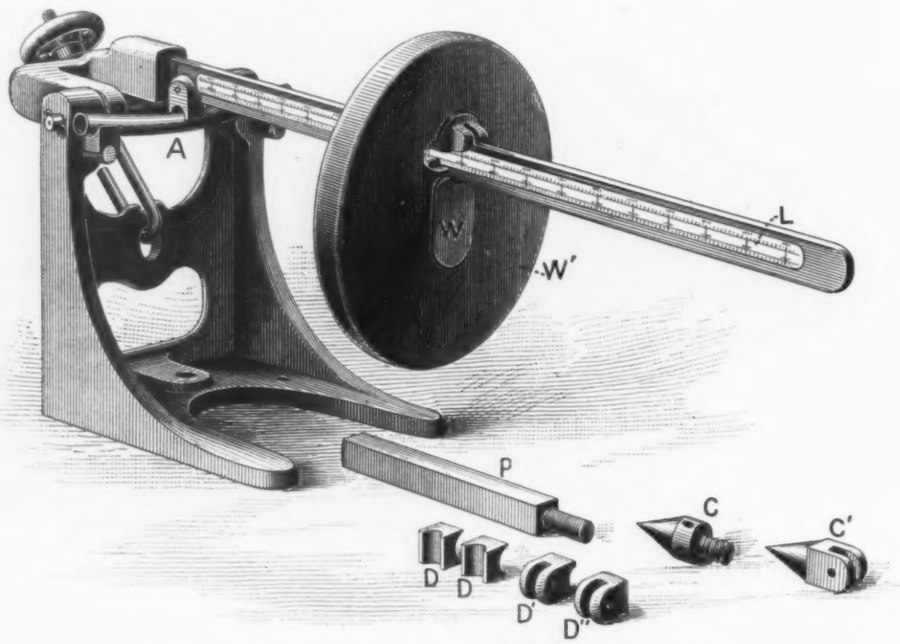
Some time ago it fell to the lot of the writer to make a number of experiments in drawing from flat sheets of metal short bicycle tubes—that is to say, tubes from 10 to 30 inches in length, which could be used direct for ordinary bicycle frames rather than to follow the usual practice of drawing them several feet in length and cutting them up to order.

It is well known that there are several methods of seamless tube drawing in common use. One of these is the Mannesmann process, where a tube, by a very peculiar rolling operation, is coaxed out into annular form from a solid rod of metal, being meanwhile punctured by a pointed mandrel. Another process is the hot puncturing of a short ingot, which is afterward reduced in dies over a mandrel by numerous operations in the familiar draw bench. Still another is the working down, by the same draw bench methods, of hollow cast ingots. A fourth is the drawing down, in a draw bench, of ordinary welded gas pipe after a special process of cleaning and removing the scale. Such tubes, however, cannot, strictly speaking, be called "seamless."

Entirely different from the foregoing methods is the one employed by some of the most eminent tube manufacturers, which consists of first drawing a shallow cup from a flat circular blank of sheet metal by the same sort of double action presses as are used for drawing sheet metal utensils, where the edges of the blank are held from wrinkling by a blank holder, under heavy pressure, while the punch pushes the work through the die and forms a cylindrical cup of somewhat less depth than diameter. This cup is afterward reduced in diameter and increased in length by a double action process, using shell blank holders, at one or more operations. This is followed by a single action drawing process, in several operations, after the same manner as cartridge shells are made. After the cup has been brought to the length of several diameters by this last mentioned process, combined with a broaching action which draws the side walls thinner than the original metal, the end is cut off and the ordinary draw bench process is used for finishing, finally producing a tube some 12 to 16 feet long. This draw bench work, as is well known, consists in reducing the end of the tube for a few inches in a swedging machine, or otherwise, so that it will freely enter the die. Afterward it is pulled through such die with a short mandrel inside of it, held by a pull rod extending back from the tube and secured to the frame of the draw bench.

The process mentioned in the first paragraph is similar in principle to the one last named, except that the tubes were made from sheet metal of about the thickness of their final walls, very little broaching, or squeezing thinner, being done, and the blank being of the proper size to produce a short tube only. Another peculiarity consisted in doing no draw bench work at all and completing the tube with the bottom left in it. To perform this successfully a new process of finishing was required, which has not yet been made public.

In looking about for a method of testing these new tubes the writer found nothing in the market which was cheap and convenient, it being out of the question to test both these and a number of other people's competitive tubes in an ordinary test laboratory at some distance from home, and at the usual price for making such tests. He therefore extemporized the machine shown in Fig. 1. This is a comparatively inexpensive affair, and is very convenient for making large numbers of bending, mashing and splitting tests rapidly and cheaply. It obviously is not suitable for tensile tests, but a small number of these made in the usual way at a regular laboratory would, in combination with the tests to be described, give sufficient indication of the general quality of the metal.



STRENGTH OF BICYCLE TUBES.—TESTING MACHINE.

The machine, as shown, is adapted for giving a pressure at the point A of anything from 10 to 200 pounds, reading by tens, with the small 10-pound weight W on the lever L, using the lower row of figures. By slipping the large 90-pound weight W' onto the outside of the small one, and reading the upper row of figures on the lever (W' being so shaped as to cover the lower ones), pressures from 100 to 2000 pounds can be read, by hundreds. The weights are mounted upon rollers, so as to be slid in and out very easily by hand, and when slid in to zero the whole arrangement is balanced. A peculiarity of the lever fulcrum is that instead of being set upon knife edges (which would not comfortably allow the desired amplitude of angular motion for bending tubes and also for the quick throwing up of the lever out of the way), it consists of a hardened and ground steel pin surrounded by two cages full of bicycle balls, mounted in the hubs of the lever. This works with so little friction as to be practically accurate enough for its purpose, and gives a long joint which is properly confined in all directions. At the extreme left of the picture is shown a screw adjustment for stopping the down motion of the lever L in any desired position. Such a machine would be extremely useful, in any place where bicycle tubing is bought and sold, for quick comparative tests of quality, and it is only a wonder that something similar has not been used.

As shown in Fig. 1, the machine in question is set for a bending test, as will be seen by the partly bent tube

mounted therein. It will be noticed that the same is laid in semicircular notches in two lower dies similar to those shown at D D, while a downward pressure is given at the center by an upper die, similar to D'. The former are swiveled by being loosely placed upon studs projecting from the frame of the machine, while the latter is pivoted to the lever L, all of them thus accommodating themselves respectively to the bending of the pipe and the swinging of the lever in its arc. Cheap cast iron dies are provided for each diameter of tube. After the tube has been bent in one direction it is well to raise the lever, revolve it over and bend it down in the other direction—such reversal of strains being repeated several times if desired.

For mashing tests the dies D and D' are removed and a convex surfaced die, D", is hung upon the lever, to act in concert with a post-like die or anvil, P, which is screwed into the base of the machine, the tube being squeezed between D" and P. If desired the dies D D can remain on their studs, to form cradle-like guides for easily locating the tube.

For flanging tests (which may prove to be splitting tests) the conical ended center punch-like tools C and C' are placed respectively in the base of the machine and upon the lever. A tube of the proper length being placed vertically between them, sufficient pressure is applied to spread out the ends thereof into a bell mouth form, of any required diameter which can be attained without splitting.

In Fig. 2 are shown four 1⅛-inch tubes and four ¾-inch tubes, all of which have been bent in the middle, first in one direction and then in the other. All but one of these show also the results of mashing tests about one-quarter way from the lower end. The two left hand and two right hand tubes show also the results of flanging tests at their lower ends, the pressure in this case having been given with the die D' without the use of the upper center punch C'.

In the table below is shown the results of some 28 tests of pieces of tube about 15 inches long cut from tubing, most of which was bought at random in open market, the sizes being ¾ and 1⅛ inch, as shown in column II. The thickness was nominally 0.035 inch. One of each of these sizes, as in lines A and B, was of some certain manufacture, while other pairs, as C and D, or G and H, were of other manufacture. Those tubes of foreign manufacture are marked respectively A, B, C, D, G, H, K, L, S and T. Those purchased of a few of the largest and best American manufacturers are marked respectively E, F, I, J, M, N, O, P, Q and R. Those eight marked from U to &, inclusive, were made by the writer in an experimental way, with the machinery mentioned at the beginning of this article.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
Mark on tube.	Nominal diameter.	Maximum outside diameter.	Minimum outside diameter.	Nominal thickness.	Maximum actual thickness.	Minimum actual thickness.	Pressure to bend down ¾ inch at middle between supports 12 inches apart.	Pressure to bend down ¾ inch reverse way.	Pressure to start mashing.	Pressure to mash to one-half diameter.	Pressure for bending ¾-inch tubes if thickness was 0.035 inch.	Pressure for bending 1⅛ inch tubes if thickness was 0.035 inch.
A...	¾	0.751	0 749	0.035	0.040	0.034	560	570	550	1,150	548	.....
B...	1⅛	1.135	1.131	0.035	0 043	0.037	1,470	1,640	500	1,100	....	1,341
C ..	¾	0.758	0.755	0.035	0.037	0.035	460	500	475	900	450	.....
D...	1⅛	1.134	1.125	0.035	0.039	0.035	1,190	1,180	500	900	..	1,180
E...	¾	0.755	0.753	0 035	0.039	0.037	910	890	800	1,560	842	.....
F...	1⅛	1.135	1.125	0.035	0.037	0.031	1,400	1,390	600	1,120	.	1.473
G...	¾	0.753	0.750	0.035	0.035	0.032	610	580	650	1,400	645	.....
H...	1⅛	1.122	1.126	0.035	0.033	0.031	1,580	1,560	550	1,050	...	1,826
I. ..	¾	0.750	0.749	0.035	0.033	0.031	570	550	550	1,150	626	.....
J....	1⅛	1.124	1.124	0.035	0 036	0.034	1,400	1,410	650	1,250	....	1,400
K...	¾	0.751	0.748	0.035	0.044	0 033	450	450	450	800	430	.....
L...	1⅛	1.130	1.130	0.035	0.036	0.032	1,030	1,050	500	950	....	1,084
M...	¾	0.754	0.748	0.035	0.036	0.033	530	540	600	1,200	547	.....
N...	1⅛	1.130	1 130	0.035	0.037	0 036	1,350	1,340	650	1,250	..	1,328
O ..	¾	0.755	0.755	0.035	0.036	0.034	640	630	500	1,150	620	.....
P...	1⅛	1.128	1.128	0.035	0.037	0.035	1,320	1,360	600	1,150	..	1,290
Q...	¾	0.749	0.749	0.035	0 037	0.033	630	630	650	1,430	666	.....
R...	1⅛	1.126	1.126	0.035	0.036	0.033	1,800	1,800	700	1,450	....	1,827
S. ..	¾	0.751	0.751	0.035	0.033	0.032	590	590	600	1,350	635	.....
T...	1⅛	1.132	1.127	0.035	0 039	0.034	1,350	1,300	650	1,200	....	1,304
U...	¾	0.754	0.753	0.035	0.041	0.038	640	620	500	1,150	592	.....
V...	¾	0.753	0.753	0.035	0.039	0.037	670	670	750	1,500	644	.....
V¹..	¾	0.754	0.752	0.035	0.040	0.036	810	820	800	1,780	779	.....
W..	¾	0.755	0.753	0.035	0.044	0.031	750	730	800	1,660	709	.....
X...	¾	0.754	0.754	0.035	0.039	0.038	720	730	700	1,500	680	.....
Y...	¾	0.754	0.754	0.035	0.040	0.038	930	930	950	1,950	861	.....
Z ..	1⅛	1.128	1.128	0.035	0.042	0.038	1,670	1,610	650	1,350	....	1,476
&...	1	1	1	0.035	0.039	0.037	1,370	1,350	800	1,400	..	1,262

It will be noticed that in columns III, IV, V, VI and VII are shown the results of measuring tests, which were made with an ordinary micrometer, having its lower jaw rounded to a spherical shape, that it might enter the end of the tube for some distance. These measurements were taken to prove certain considerable inaccuracies in regard to actual size, as well as in roundness and uniformity of thickness. Some of the variations from the nominal were thus found to be of considerable amount.

In column VIII are shown the actual pressures (at point A in Fig. 1) required for bending these tubes down to ¾ inch, they being fully supported in the swiveled dies, set upon their studs, which were located with their centers exactly 12 inches apart.

In column IX are shown the pressures required for bending in a reverse direction. In some cases these are greater than for the first bending, and in some cases less. It is probable, therefore, that the variations were caused by the accidental position of the thick sides of the tubes, no pains having been taken to locate them about their own axes with reference to uneven thickness.

In column X are shown the initial pressures for mashing; and in column XI the terminal pressures when the tubes were flattened to thicknesses equal to half their diameters.

In column XII are shown the estimated pressures which would have been required for bending the ¾-inch tubes had their actual thickness been the same as their nominal thickness, which was 0.035 inch. In column XIII are shown a set of similar figures for the 1⅛-inch tubes. These last two columns may, therefore, be regarded as showing corrected pressures to replace those given in columns VIII and IX when considering the relative strength of the different makes of tubes.

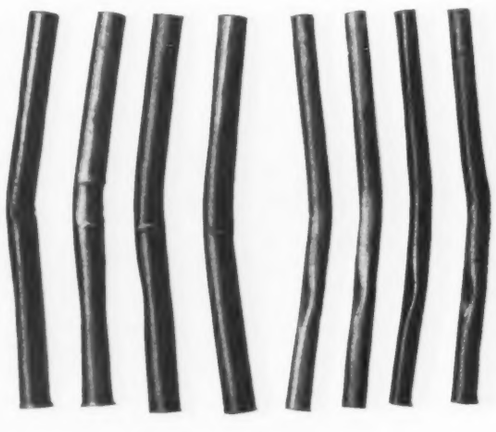


Fig. 2.—Tubes After Testing.

STRENGTH OF BICYCLE TUBES.

A rather remarkable circumstance is that tubes for sale by reputable dealers should vary so much in strength—in some cases nearly 100 per cent. Instances of great variation are shown by comparing C and Y, column XII; or L and R, column XIII, &c. The mashing tests also show much variation.

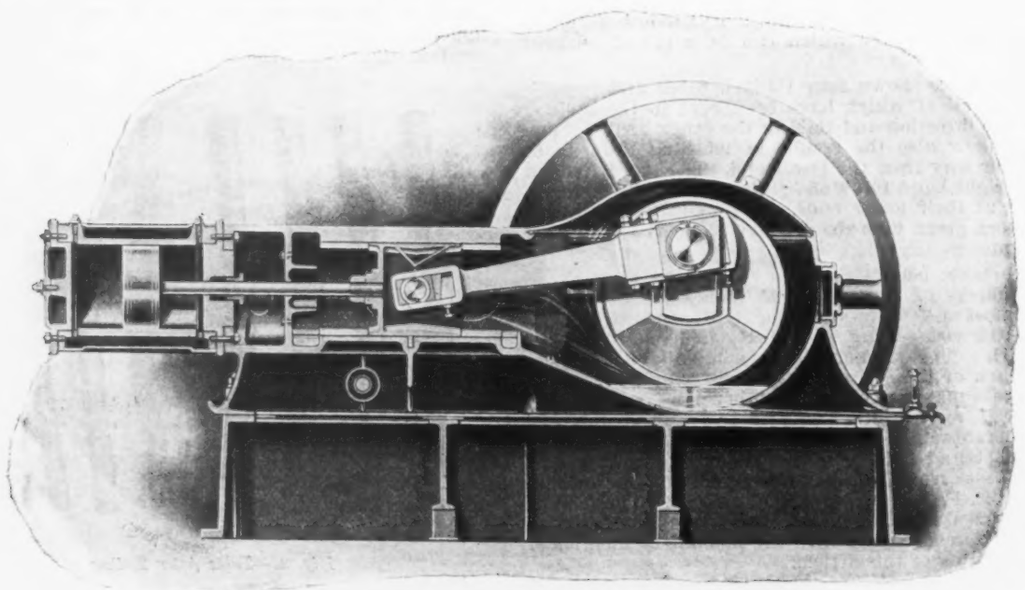
It will be noticed that the home tubes (thus to call them) show a higher average strength than do those regularly manufactured by various systems in various countries. It should be stated that no particular pains were taken to secure a good quality of material, ordinary sheet steel having been purchased in open market, the only specifications being that it should be of proper quality for drawing purposes. So little did the sellers know about its composition that the actual percentage of carbon was not ascertained. Some of it seemed very soft and flexible, and was probably of as low carbon as 0.10 or 0.12 per cent. Other sheets, purchased at different places, must have been 0.25 or 0.30 per cent. carbon, as they were rather hard and stiff, even after thorough annealing.

From the fact that these short drawn tubes were most of them stronger than tubing made by some of the most prominent manufacturers in America, it would seem as if the method of producing them must have some advantage over various other methods referred to as being used for making tubing in long lengths. Whether or not such possible advantage is due to absence of draw bench operations is an open question. The writer does not profess to have made a thorough set of comparative experiments, but merely here sets forth the results of such as he incidentally had occasion to make, thinking that they possibly may be of interest to some of the readers of *The Iron Age*.

Internal Self Oiling Engine.

The distinctive feature of the engine recently designed by the Ball Engine Company of Erie, Pa., is the automatic oiling system. As will be seen in the sectional views, the oil is contained in a pocket in the bottom of the frame. The crank disks in revolving carry over a portion of this oil into a trough in the top of the frame, covered in by the hood. From thence the oil flows in streams into the main bearings through the passageways shown in the end view, and is also carried by the radial holes to the crank pin.

There are removable guiding plates, one on each side of the connecting rod at the ends of the guides next to the crank disks, so arranged that they make a slot through which the oil is guided directly into the crosshead, which has a large bell shaped opening to receive it. The lower guides are so designed that the crosshead floats on the oil, and as the slides have large areas the wear is practically eliminated in these parts. As the guiding plates guide the oil directly into the crosshead, the doors on the side of the frame may be taken away for the purpose of taking indicator cards or for examination of the cross-



Longitudinal Section.

INTERNAL SELF OILING ENGINE.

head, without the oil being thrown on the engineer or on the floor.

Another essential point in connection with the oiling device is the dividing wall between the cylinder head and the crosshead chamber of the frame. By means of this the oil is kept cool and the water of condensation from the piston rod stuffing box is prevented from mixing with the oil in the frame, while access to the piston rod stuffing box is gained by openings in the frame between the division wall and the cylinder head.

In the crank end of the engine will be seen a hand hole closed by a plate screwed in. By unscrewing the plate access may be gained to the crank pin boxes for adjustment. This obviates the necessity of removing the hood. The hood, which is made of cast iron corrugated, is fitted oil tight, and rests in a groove without fastenings of any kind, and therefore may be readily removed, exposing the disks and crank end of the connecting rod. The gauge and cock at the end of the frame serve the double purpose of observing the hight of the oil in the pocket and draining the oil when required.

The connecting rod and straps are forged from steel blooms. The adjustments, as will be seen in the longitudinal view, are by means of wedges operated by T-pointed set screws, which move the wedges up or down. As the movement of the wedges is in the same direction, the length of the rod is not altered, nor is the position of the piston changed. The adjustments are made by hand and with the greatest accuracy.

The crank shaft is a single forging of open hearth steel, containing the proper amount of carbon to give exceptional strength and durability, and ground to an accurate, smooth running surface. Cast iron disks are secured to the shaft by keys in such a manner as to prevent their getting loose or impairing the strength of the shaft. The proportions of the counterbalance are such as to insure perfect balance to the engine.

The introduction of the shaft into the engine is accomplished by arranging the shaft boxes (which are entirely separate from the frame) in a jaw cutting into the bed deep enough to bring the center of the shaft in a plane with the center line of the engine, finished spots being provided to meet corresponding finished surfaces on the boxes. These boxes are lined with babbitt, and by means of the set screws on top and in front the wear is taken up and the shaft kept in alignment. The main bearings are, therefore, not only self oiling, but adjustable.

The cylinder is cast from a special mixture of iron of great density, and of such nature that the cylinder bore becomes highly polished and the wear in service is reduced to a minimum. Both cylinder heads are ground to a steam tight surface. The piston is as light as consistent with the proper strength. The piston rings are self adjusting and give a steam tight fit with little friction.

The eccentric and strap are self oiling. The straps are designed with a reservoir at the bottom containing oil, and by an arrangement with flanges and grooves the oil circulates around the eccentric while in motion, and only requires to be renewed at long intervals. The valve is of such form that it automatically takes up its own wear.

The Elmira Steel Company. — A short time ago the well-known iron firm of C. R. Baird & Co. purchased the Elmira Iron & Steel Rolling Mills, at Elmira, N. Y., and the Phillips Tin Plate Company of Philadelphia. The equipment of the latter plant has been moved to Elmira, and rapid progress has been made on extensive improvements. Part of the works are now in operation, and the entire plant will be running at full capacity within ten days. On July 12 the Elmira Steel Company were organized under the laws of the State of New York, with a paid in cash capital of $500,000. The directors of the company are C. R. Baird, F. W. Ayer, Thomas de G. Richardson, H. L. Cheney, F. B. Baird, F. N. Diven and Frederick McOwen. C. R. Baird is president and H. L. Cheney secretary and treasurer. The present capacity of the plant is about 40,000 tons of universal open hearth steel plates and 20,000 tons of bar, angle, plate and band iron annually. The new company will add two large open hearth furnaces and erect a new mill for the manufacture of black sheets and tin plate. It is expected that employment will shortly be furnished to 1000 men.

The growth of the famous Calumet & Hecla copper mine during recent years may be judged from the fact that 12 years ago the number of drilling machines in active operation throughout the whole property was 70, while the output of the mines averaged 3500 tons weekly. To-day 213 drills are working day and night in the mine, and the weekly output of mineral is 10,000 tons. Further additions to the equipment of drills are about to be made.

The Atikokan Range.

DULUTH, July 29, 1899.—A sixth distinct and important iron ore range must hereafter be considered in all estimates of the supplies of ores to come from the Lake Superior country henceforward. Wealthy iron mining men of the United States have just closed an option on lands in what is known as the Atikokan range, in Canada, west from Lake Superior, and in a few weeks will have their men at work testing and examing the ore. They will not do prospecting and exploration, for that is scarcely necessary where the iron ore rises 100 feet above the surrounding soil and can be traced in a continuous belt for thousands of feet and at close intervals for many miles, but they will examine to see whether the surface assays of the rich ore hold out, and will begin mining immediately.

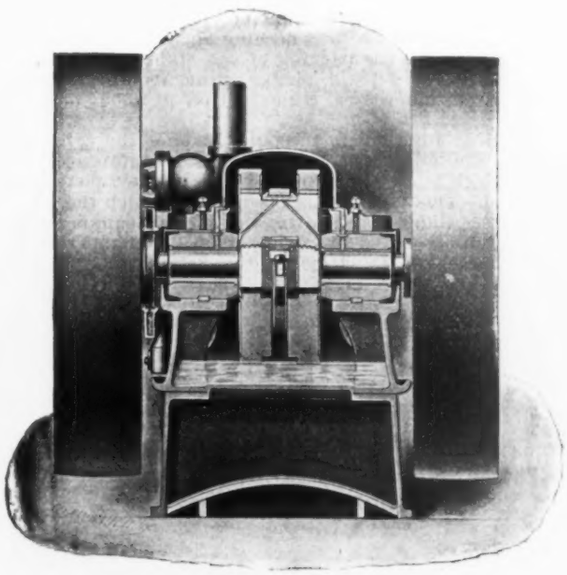


Fig. 2.—Sectional End Elevation.

The Atikokan range has been known for 15 years. Back in 1889 these extensive and rich deposits of magnetite lying about 100 miles west from Lake Superior and 50 miles north from the Vermillion range in Minnesota, along the course of the Atikokan river, were just beginning to attract notice from iron mining men of the United States and were examined with a view to purchase. The extent and high grade of the outcroppings invariably excited surprise and a tract four miles long along the strike of the range was taken by McKellar and Graham. Later several miles west of these locations another extensive and valuable outcrop was discovered and taken by Pattison, Roberts and Bischoff. The immediate result was that these rich deposits were traced for a length of 16 miles by mere surface outcroppings, no underground work being necessary. Nothing more than a superficial examination of the deposits has ever been made, sometimes a shallow crosscut, elsewhere a shot or two to secure unweathered samples.

Within the past two weeks an option has been taken on the McKellar-Graham lands, extending four miles along the veins, and $10,000 paid down. The option is for the further sum of $350,000 and gives the takers opportunity to explore and thoroughly test the lands for a period of six months. They will at once commence work, taking a few men from this city next week, and tunnels will be run into the ore at the foot of the outcrops in a number of places. The lands lie some 40 miles from the nearest available point on the Canadian Pacific, and within less than a mile of the surveyed line of the Ontario & Rainy River, which is being built under a Government grant of $10,400 per mile, and which will have its rails from Fort William, on Lake Superior, passing this location within a few months.

For a distance of 1800 feet on the McKellar lands the ore outcrops on the sides and top of a steep hill, 400 feet wide at base, 350 feet wide at top, and 100 to 120 feet high. Running along the top and sides of this hill are three distinct veins of magnetite, one 10 to 20 feet wide, one 40 to 50 feet wide, and the other lying between them and narrower than either. It is the opinion of such men as Capt. Jos. Sellwood, who made an examination for the prospective buyers last month, that these veins run together at depth. The country rock is a Huronian hornblendic and chloritic schist, and the dip is nearly vertical, 86 degrees north, with a strike of N. 75 degrees east. As the Huronian rock has a width in this section of eight miles and rests comfortably on the Laurentian, there is every reason to believe the depth of the Huronian and its interbedded magnetite to be practically unlimited, so far as the miner may be concerned. The range is practically parallel to the Vermillion and Mesaba and 50 miles north of the former.

Examination made in June by Capt. Joseph Sellwood, for the purchasers, was so favorable as to determine

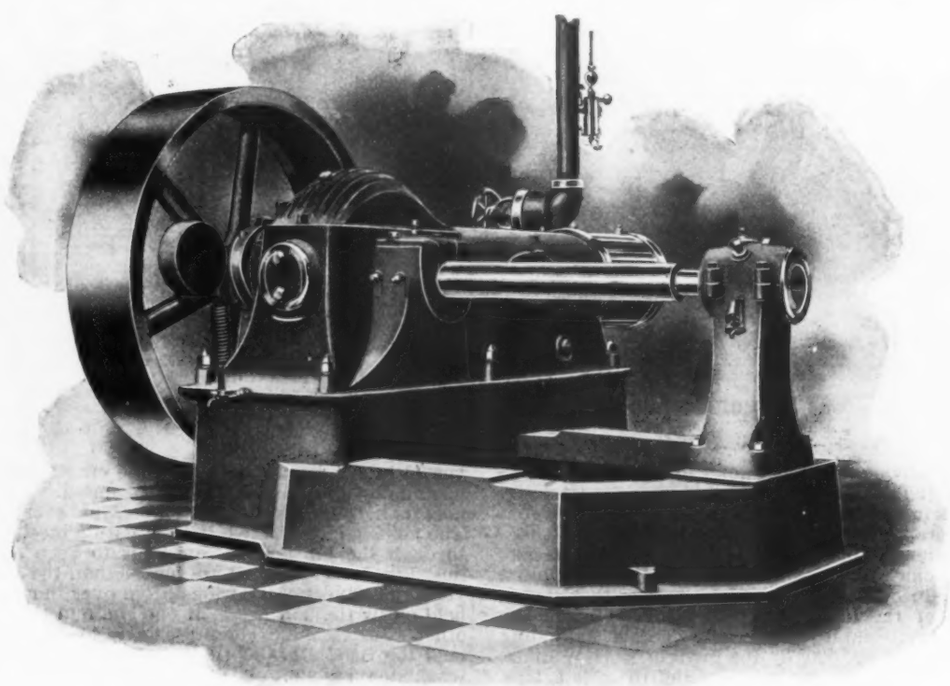


Fig. 3.—Extended Shaft.

INTERNAL SELF OILING ENGINE.

them to take the property. Another examination was made by an Eastern expert, and these corresponded closely with that made some nine or ten years ago by D. H. Bacon, president of the Minnesota Iron Company. On Mr. Bacon's report the Minnesota Company, in 1890 or thereabouts, took the property under lease and paid $2000 a year until the discovery of the Mesaba range with its vast deposits and easily handled ores made it appear that hard and distant deposits like the Atikokan would be unavailable for many years. Mr. Bacon's averages showed analyses as follows: Iron 62.94 to 63.84, phosphorus 0.030 to 0.001, and with no titanium. The assays made from samples taken by Captain Sellwood this summer showed much the same with phosphorus averages of about 0.033. The Geological Survey of Canada has shown averages of about 64.5 to 68.5 iron and as low as any of the above in phosphorus. Reports of late experts have stated that there should be no difficulty in mining this ore at a cost of not to exceed 40 to 50 cents a ton, and this figure would appear to me to be very liberal, considering its position and character. It can be dropped by side cut blasting directly to the side of a track, and loaded into cars for shipment to Lake Superior at docks to be built.

Immediately to the west of the McKellar-Graham locations lies Sawbawe Lake, a sheet of water three miles in length. Along the formation west of it the ore outcrops again, occasionally, though a considerable depth of soil covers most of the surface. Still further west there are outcrops in hills like those of the McKellar-Graham locations, and the character of the ore seems to be the same for the entire distance as far as can be determined on surface. The entire length of ore discovered by these outcroppings is about 16 miles.

It is the intention of the buyers of these properties, as I learn semi-officially, to ship their ores to the United States and reduce in the eastern lake region, there being a drawback of the import duty of 40 cents when the manufactured material is re-exported. There is a standing offer of a bonus of $50,000, by the town of Fort William, for the manufacture of iron therein, and there is a high bonus on iron made in Canada from Canadian ores, which may result in the reduction of part of the product of these quarries in Canada, but so far as the western part of Lake Superior, Port Arthur and Fort William are concerned, there is no possibility of making a charcoal iron.

In 1890 an option was granted on part of these lands to the Société Générale pour Favoriser l'Industrie Nationale of Belgium, but it was allowed to drop, being on a basis of 40 cents royalty.

It is safe to say that there are large and as valuable iron ore deposits, hematite and magnetite, in the same general location with these Atikokan finds, and that they will have to be figured on later. Your correspondent himself knows of the existence and locality of some of these and has no doubt that in time the fields of Western Ontario will be as well known as those of Minnesota are to-day.

D. E. W.

The Government is preparing to take a complete census of Cuba and Porto Rico.

The American Blower Company's Disk Fan Engine.

An engine suitable for operating ventilating fans must be capable of running smoothly and noiselessly at very high speeds, with practically no attention. These points are claimed for an engine of extremely simple design, built by the American Blower Company of Detroit, Mich. It requires no further attention than to start and stop it and to pour a certain amount of oil into the oil chamber occasionally. There is nothing about it requiring adjustment, except the packing of one stuffing box around the shaft. It is a plain, single acting, reciprocating engine with piston valves, which cut off at about one-half stroke.

Steam is admitted to the outer ends of the cylinders, Fig. 4. The crank pin brasses are fitted into an oblong yoke, which is cast in one piece with the two pistons on each end. This yoke forms the ways in which the crank pin brasses slide up and down, and as the steam is admitted alternately to the two cylinders a horizontal reciprocating motion is imparted to the yoke, which is converted into a rotary motion by the crank brasses sliding up and down in the yoke, as above stated. The fan wheel acts as a fly wheel to carry the crank over the centers. The yoke is cut into two halves, with a steel pin running through the top and bottom ends to keep each half in line, Fig. 5. These pins are longer than the width of the yoke and have spiral springs fitted over them at one end, held on by the bolt heads at one end and the yoke at the other. Just enough compression is given the spring to hold the two halves of the yoke in their normal position when steam is shut off and not let the crank pin brasses fall out. When the engine is running the steam pressure on the pistons keeps the brasses up snug against the crank pin. As there is a space of nearly ¼ inch between the half yokes, any wear of the crank pin or brasses is taken up and will continue to be taken up until the ends of the yoke come together, or are worn out. If the engine is properly lubricated, it will take years to do this, and even then the brasses can be replaced readily. The valve mechanism is of the same construction as the other running gear, only proportionately smaller.

One of the greatest problems of any engine is thorough and perfect lubrication. In this engine it is so simple as to require no adjustment, regulation or other attention than to pour a small quantity of oil into the chamber occasionally. Every running part of the engine is lubricated from the chamber, as the crank and other working parts churn up the oil and water into a foam, deluging everything within the case. As more or less condensation always works by the pistons into the oil chamber, traps and settling pockets, Fig. 3, are provided for the separation of the oil from entrained water below the oil

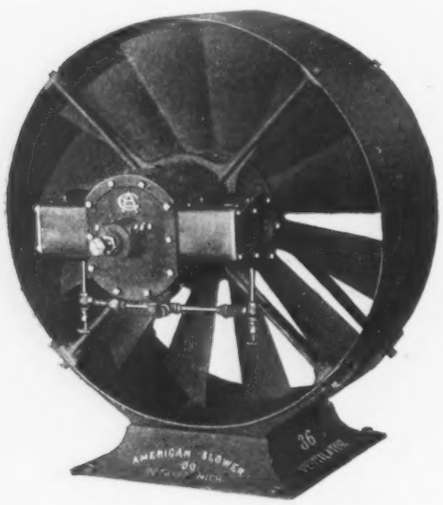


Fig. 1.—Engine Driving Fan.

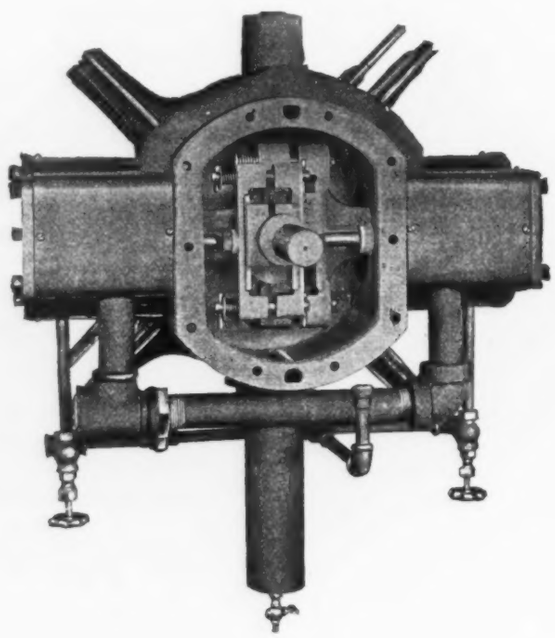


Fig. 2.—Side Plate Removed.

AMERICAN BLOWER COMPANY'S DISK FAN ENGINE.

chamber, where the oil and water are not being agitated, and channels lead from this to a pocket at the top of the chamber so as to equalize the pressures, prevent siphoning and drain the water off automatically at a certain point to prevent overfilling of the chamber.

All the working parts are entirely inclosed in the cast iron shell. It is dust and water proof, and can be run in the dirtiest places without trouble. It is intended to run at from 600 to 800 revolutions per minute.

Pacific Coast News.

SAN FRANCISCO, July 24, 1899.—Beyond the fact that people do not like to be rudely disturbed when they are in a condition of repose there is nothing very alarming in the present position of the Great Northern and the Northern Pacific with regard to the trade of the Coast. The condition of our merchants would be indeed deplorable if they did not have the recourse of water transportation to back them up in their struggle. I think they may count, too, on allies among the railroad people, because it seems to be the interest only of these two lines to accede to the wishes of the jobbers of Chicago, St. Louis and Kansas City. It is in fact the interest of the other roads to put a stop to the system of graded rates. Kept up long enough it would deprive them of the greater part of their Eastern and Atlantic States business and throw it all into the hands of these two roads. It is as much a fight between the manufacturers of the United States and those of the West as anything else. Under the graded system the manufacturing States of the West would monopolize the trade of the Pacific Coast and the roads in question could have most of the business themselves without dividing up with other roads. Unless the industrial interests of the older States are willing to see their Western competitors cut them out completely in this promising field they must either give up the struggle or stand in with the Pacific Coast trade in fighting for the maintenance of the old or "postage stamp" system of rates on the roads. A steamer to carry a large amount of cargo could make the trip around the Horn in 40 days, and as far as freight is concerned beat the roads out of their boots. Of course fast freight by rail could beat that by a good deal, but not the ordinary slow freight. And it has been said that a steamer carrying 11,000 tons can be had for this very purpose. I suppose it will have to come to that at last. Indeed, when the Nicaragua Canal comes to be put through that will be the normal way of bringing merchandise here But for the present there is no doubt in my mind that the trade of the Coast would prefer to leave matters as they were a couple of months ago. But this can only be done by the merchants of the Coast and those of the East working together. United they would form a mighty force and even James Hill, great railroad builder and astute man of business as he is, might well hesitate.

Indeed, the trouble is already bearing its natural fruit. A great many persons are availing themselves of the Canadian Pacific as a reasonable carrier, and for the past three weeks or so some of the steamers from Victoria and the Sound have just been loaded down with Eastern merchandise arriving that way. To give an example: The "City of Puebla" arriving here the other day had, besides large quantities of other merchandise, 200 barrels of sad irons, 3030 boxes of tin plate, 1113 bars of steel, 2151 packages of electric goods, 47 crates of bathtubs and a large quantity of iron pipe, &c. "The Walla Walla" had, besides a very big cargo of other Eastern goods, large quantities of goods in this line. That affords an immediate method of escape from the exactions of these roads. Of course the hope is generally entertained that some *modus vivendi* will be found, and no doubt it will, but not before a good deal of unnecessary injury has been inflicted on the interests of all concerned—railroads and merchants alike. The mercantile community on this coast is now thoroughly aroused and it does not intend to and will not submit to the changes recently proposed. In fact the roads have left the merchants no option in the matter. Self preservation dictates that they must fight, and fight they will. The new scheme would confine those of San Francisco, Portland, Seattle, Tacoma, &c., to their own cities, and not alone that; to do any business at all they would have to become retailers, and even then they would be subject to the keen competition of the Western jobber. Their great capitalization gives them unwonted strength and it is not wise to tempt them to put it forth. I refer to the matter in this manner because I am, on reflection, forced to the conviction that any mere truce cannot lead to a permanent settlement. The graded system has to be abandoned altogether in Pacific Coast territory or the fight keeps on. J. O. L.

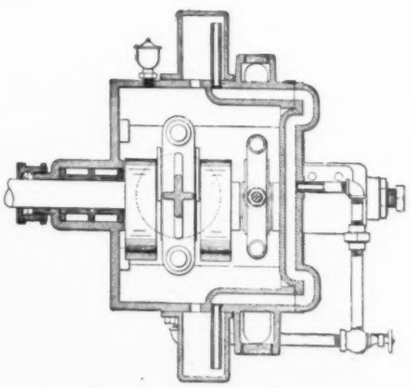


Fig. 3.—Section Elevation through Shaft.

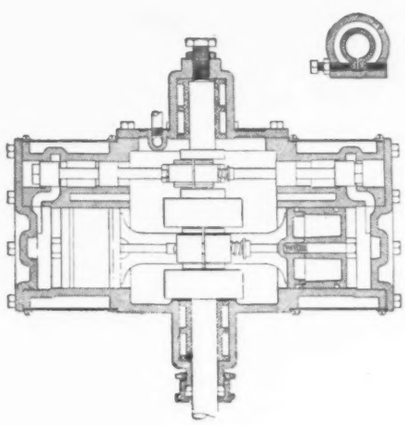


Fig. 4.—Sectional Plan through Pistons.

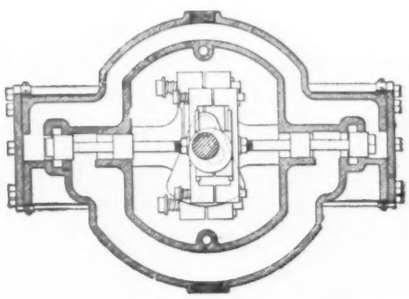


Fig. 5.—Vertical Section through Valves.

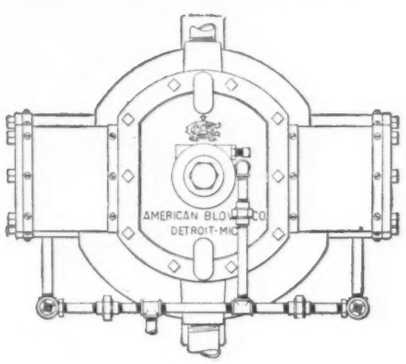


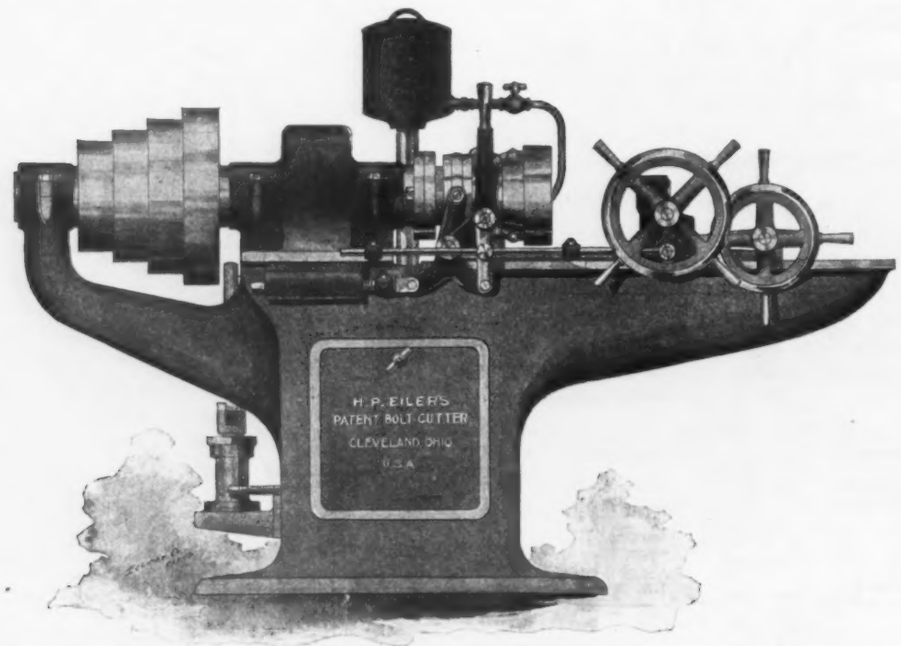
Fig. 6.—Elevation

THE AMERICAN BLOWER COMPANY'S DISK FAN ENGINE.

W. W. Kurtz of Philadelphia has purchased the interest of the Tyrone Mining & Mfg. Company in the ore rights of the Dry Hollow property in Huntingdon and Center Counties, Pa.

The Ajax Bolt Cutter.

The Ajax Mfg. Company of Cleveland, Ohio, are introducing a bolt cutter built under patents issued to H. P. Eilers. The head is arranged with a very simple form of dies (four to a set), and of such shape that they can be made in any shop where such machines are used. They can be changed from one size to another without the necessity of disconnecting any part of the head or machine. The driving gears are entirely encased, run in oil, and are placed where chips cannot reach them. The cone pulley is so placed that oil cannot get on the belt. The pump is placed outside of the column and at a point where it can be packed more easily than if it were placed within the column. The chips and oil, or other solution used to lubricate the dies, drop into an automatic training device or separator within the column, and the chips are removed, after having remained over night to drain off all the oil, by simply opening the door in the side of the column and drawing out the chip pan. The automatic opening and closing device is placed on the same side of the machine that the operator occupies. This facilitates the handling of the machine when it is desired to open and close the head by hand. The carriage supporting the vise or gripping jaws is moved to and from the cutting head without the use of racks and pinions, thereby obviating the danger of breaking rack or pinion teeth, or dies by chips dropping in between the teeth.



THE AJAX BOLT CUTTER.

An interesting programme has been arranged for the seventh annual meeting of the Society for the Promotion of Engineering Education at Columbus, Ohio, August 17, 18 and 19. Among the numerous papers of special interest to be presented are the following: "The Essentials of a Technical Education," by A. L. Rice, Professor of Steam Engineering and Electricity, Pratt Institute; "Hydrocarbon Engine Testing Plant of the Ohio State University," by Wm. T. Magruder, Professor of Mechanical Engineering, Ohio State University; "Methods of Teaching: By Text-Book, by Lectures, by Laboratory, by Design, by Memoir," by C. F. Allen, Professor of Railroad Engineering, Massachusetts Institute of Technology; "Engineering Education and 'Expansion,'" by W. S. Aldrich, Professor of Electrical Engineering, University of Illinois; "An Apprentice System in College Shops," by O. P. Hood, Professor of Mechanical and Electrical Engineering, Michigan College of Mines; "The Desirability of Uniformity in the Use of Mathematical Symbols and Terms," by A. E. Haynes, Professor of Mathematics, University of Minnesota; "The Use of Graphical Methods in the Solution of Problems in Mechanics," by C. M. Woodward, Professor of Applied Mechanics, Washington University.

The Locomotive Smoke Preventer Company have been incorporated in Delaware with $6,000,000 of capital stock, all common, and in shares of $100 each. The directors are: President, Josiah Quincy, Mayor of Boston; vice-presidents, Edwin S. Cramp of Cramp & Sons, Philadelphia, and Hon. Perry S. Heath, Washington, D. C.; treasurer, George D. Provost of Provost Bros & Co., bankers, New York; general manager, Albert Freeman; James S. Clarkson, William Finley Brown, Hiram M. Kirk, New York; R. E. Door, publisher *Mail and Express*, New York; Fletcher Heath, Continental Tobacco Company. The device consists of a funnel attached to the front end of the locomotive's boiler, from which a draft of air is carried through a coil of pipe and heated hot enough to ignite the gases arising from the coal in the fire box. This, it is claimed, not only entirely prevents black smoke, but by causing complete combustion saves 15 per cent. of the fuel. On the Southern Railway, where the device has been in use for some time, the consumption of coal per train mile, it is claimed, has been reduced from 79 pounds to 53 pounds. Fifty engines are being equipped by the company for railroads serving Boston.

The Vulcan Western Company of Sewaren, N. J., were incorporated this week with a capital of $300,000, to smelt, refine and reduce metals. The incorporators are Henry Kern and George J. Bantzhaff of New York City, and Karl G. Weiss of Perth Amboy, N. J. The company have a large plant at Sewaren for the reduction of Tin Plate Scrap.

United States Consul Kennedy, at Para, Brazil, in a recent report on the Amazon Valley, says that he considers Brazil the most important of all South American countries from a commercial point of view, and Para, he thinks, presents greater advantages to the manufacturer and merchant than any other Brazilian city. In the large centers of population there are many opportunities for the sale of goods and the initiation of such enterprises as water works and trolley roads. Along the Amazon and its tributaries, the Purus, Jurua, Madeira and Negro, there are immense rubber forests, which promise a supply of rubber for fully fifty years. There are splendid opportunities for making money by cattle raising along the Amazon, and one can find an abundance of cocoanuts and cabinet woods there. The city of Iquitos, in Peru, up near the head of the Amazon, is regarded by Mr. Kennedy as a promising place, inasmuch as it is in the center of a highly productive region.

The convention of the Iron Molders' Union of North America, in session recently at Indianapolis, Ind., adopted an important resolution by which the union assumed jurisdiction over the machine molders and all who work at molding, and advised all members to accept jobs on molding machines and bring out their best possibilities. Toronto, Canada, was selected as the next place of meeting.

The Iron Age.

New York, Thursday, August 3, 1899.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

THE IRON AGE INDEX.—The index to Volume LXIII of *The Iron Age*, January-July, 1899, is now ready for distribution. It will be forwarded to applicants at the offices of *The Iron Age*, 232-238 William street, New York.

Forrest Building, 117-119 South Fourth street, Philadelphia.

Hamilton Building, 335-337 Fifth avenue, Pittsburgh.

Fisher Building, Dearborn and Van Buren streets, Chicago.

Pickering Building, Fifth and Main streets, Cincinnati.

Commercial Building, 520 Olive street, St. Louis.

Mason Building, 70 Kilby street, Boston.

Cuyahoga Building, 311 Superior street, Cleveland.

The Bankruptcy Convention.

The discussions at the conventions of referees in bankruptcy, held in Chicago last week, developed a number of interesting points. Prominent among these is the admission quite generally that the act of Congress governing proceedings in bankruptcy is replete with defects, so that the necessity exists of making sweeping amendments if it is to be continued as a permanent measure affecting commercial interests. This is especially noteworthy as coming from a gathering of officials presumably desirous of retaining their positions, and who might reasonably be expected to criticise tenderly an act on which their official lives depend. Charles B. Keller of Omaha was conspicuous in exposing the weakness of the statute. Among other things he said:

"The law as it stands to-day is full of defects and in need of radical amendment. I believe in liberality to the honest but unfortunate bankrupt. Generosity, however, should cease where justice begins. Is it fair that the creditor should be stripped of every protection accorded him by the State statutes? Yet that is precisely what is done by the new bankruptcy law. The definition of insolvency renders the act practically valueless to creditors. In cases of involuntary bankrupts, where the defendant has left for parts unknown, it takes 25 days for the creditors to get together and elect a trustee. During this period there are numerous opportunities for the bankrupt to dispose of his property and defraud his creditors.

"In voluntary cases of bankruptcy when a man files a petition why should he be allowed to retain possession of the estate until the final settlement has been made? It is a temptation to the debtor and imposes an unfair and unjust hazard on the creditors. In my judgment the moment a man files a petition in bankruptcy his estate should be delivered to the marshal of the district to be held until the trustee has been elected. The law should be amended so as to dispose of the entire controversy at one hearing. This method would be much less expensive to those concerned and the administration of the act would be greatly facilitated.

"The provision relating to the detention of the bankrupt in the event he tries to avoid examination is also in need of radical amendment. The section at present is too vague and uncertain. It should be specific in detail and not left open to various constructions. The act should be so framed that it will make men honest in spite of themselves. There should be a provision added to the definition of crimes to reach each and every rascal who seeks to defraud his creditors."

Another point developed is the strong belief that attemps to secure radical changes in the law will result in the repeal of the act in its entirety. The hostility to a bankruptcy law by influential business interests was recognized as a continuing adverse force, which only awaited a favorable opportunity to seek its overthrow. Nevertheless, a strong sentiment was shown to exist throughout the country in favor of affording means of relief of this character to unfortunate debtors, honestly bankrupt, who should have an opportunity to make a fresh start. In the main, the law was declared satisfactory as the great majority of cases coming up for settlement consist of men against whom no complaint is made of sharp or dishonest practices. Society is benefited by the opportunity thus afforded to men of ability and integrity to regain a footing in the business world.

Another interesting point was brought out by Judge C. C. Kohlsaat, a prominent Chicago jurist. He opposed a bankruptcy law as a permanent institution in this country, asserting that in a year at the most from the passage of such an act the law should cease to be in operation. He said: "I am thoroughly satisfied that there is no excuse for a bankruptcy act except in analogy to the year of jubilee of the early ages, when the slaves were freed every 50 years to give them a new start in life. I think that when a man enters into a contract with you in the future he should understand that if he lives 15 or 20 years more he has got to stay under that law. Then every 15 or 20 years I would revive the act and let loose a lot more of those who are in chains because of depreciation in financial affairs; but I would not ask a bit of odds for a man in the first seven eight or ten years preceding the enactment or following the repeal of the bankruptcy act."

This is indeed a practical suggestion. If his idea were put in force no opportunity would exist, at least under national law, for a man to evade the consequences of his own financial acts. It is almost needless to say that the convention did not indorse Judge Kohlsaat's views.

The Scarcity of Workingmen.

Workingmen are in active demand in the Central West. Many establishments are unable to get out their full product because of a shortage of men. The scarcity is not confined to skilled workmen, but common laborers are also in extremely short supply. The lack of skilled labor has been attributed by employers to the efforts of trades unions to cut down the number of apprentices permitted in the different trades. But this view is upset by the fact that the shortage of men is not confined to any class, but appears to be equally felt among those who require no long training. Instances are cropping out of blast furnaces and rolling mills just starting up whose operations are seriously handicapped for the want of sufficient workmen. In some sections the scarcity of labor is caused by the activity in railroad work. More men, by many times over, are being employed this year on all kinds of construction work for railroad companies than in any other year since the activity in new construction in the eighties. This year the work being done is not so largely new construction, although more railroad building is going on than for several years, but it consists of track elevation in cities, extensions of existing lines, the laying of additional double tracks, the building of new bridges, the improvement of terminal facilities and

miscellaneous work in the direction of improvements, all of which calls for the employment of large bodies of common laborers. But the activity in railroad work is only a part of the general activity in business. All branches are pushing to the utmost limit. Everywhere we see the same pressure either in production for present necessities or preparations for the future. All of this activity causes greater pressure for labor. So seriously is the pressure now felt in some lines that if it continues it is likely to create a demand for the relaxation of the immigration laws.

Our Exports of Iron and Steel.

The Bureau of Statistics has just published advance sheets of the export statistics which complete the fiscal year. Although the figures deal with "water which has passed by the mill," some interest does attach to them as measuring the strength of the recent export movement. We say advisedly recent, because since the rise in prices new business has fallen off heavily. Probably all the material shipped to the end of the last month was on account of old low priced contracts.

The tonnage and value of the leading articles in the export statistics was as follows during the fiscal years 1896-97, 1897-98 and 1898-99:

Export of Iron and Steel.—Fiscal Years.

	1896-97		1897-98		1898-99	
Artic	Gross tons.	Value.	Gross tons.	Value.	Gross tons.	Value.
Iron ore	9,770	$34,168	11,587	$34,224	31,412	$66,400
Ferromanganese,	168,890	2,331,771	8,403	344,743	495	20,667
All other pig iron			228,465	2,385,252	299,271	3,290,628
Scrap	16,566	193,503	60,195	632,304	91,985	1,041,229
Bar iron	3,466	126,646	4,770	163,264	10,519	365,144
Steel bars	41,298	1,121,090	16,864	470,052	32,974	944,874
Iron rails	4,181	79,488	2,769	37,150	11,776	141,706
Steel rails	107,991	2,482,208	229,783	4,613,376	266,089	5,298,125
Billets, ingots and blooms	not sp.	not sp.	16,100	290,627	43,242	882,790
Hoop, band and scroll	384	16,984	1,522	47,327	3,461	107,703
Wire rods	not sp.	not sp.	14,469	330,022	25,220	580,493
Iron sheets and plates	1,907	92,332	4,056	182,809	6,744	324,747
Steel sheets and plates	2,497	118,965	12,215	354,579	50,307	1,634,866
Structural steel	not sp.	not sp.	30,586	1,183,482	49,069	1,759,988
Wire	48,093	2,242,617	61,185	2,593,306	96,051	3,891,180
Cut nails	11,820	519,471	14,424	612,234	14,647	604,215
Wire nails	4,439	357,541	10,221	458,787	22,872	973,434
All other nails and tacks			1,923	245,722	2,107	286,945

These figures, carefully interpreted, are of much value in the effort to arrive at some conception of the total tonnage of our exports, as affecting the requirements of raw material. To begin with, we eliminate scrap and the amounts stated under iron rails. The latter are quite evidently old material for rerolling, the average price of about $12 for 1898-99 substantiating this view. In fact, we suspect that some of the "steel rails" are really not new, but are old material.

In this way we reach an aggregate tonnage of pig iron, billets, tin plate bars and various finished material of 913,068 gross tons for the fiscal year ending June 30, 1899, as compared with 651,286 gross tons during the preceding fiscal year. The data for the year 1896-97 possess no value for this comparison, because important items are missing. We may add that we suspect that the item "steel bars" includes tin plate and sheet bars, which really ought to be classified with billets, &c.

There must be added to the direct returns of tonnage some estimate of the tonnage of some important lines for which weights are not given. Thus we find under "pipes and fittings" exports to the extent of $5,874,228 in the fiscal year 1898-99, which probably represents fully 150,000 tons, and exports of castings not elsewhere specified aggregating $1,055,525, which probably represents 40,000 tons more. Taking the weights of machinery of various forms, &c., we reach a tonnage which is not far from 1,250,000 tons, or fully 10 per cent. of our consumption of pig iron during the period under review.

If our high prices cut off any serious proportion of that great tonnage—and they are already doing so to some extent—then there will be an appreciable increase in the supply available for home use, in addition to that which is now coming through the expansion of output. In other words, our export has become so important a part of our business in iron and steel that we are directly affected by developments abroad, and any break there must soon react upon us here.

We may turn now to some of the lines of goods in which tonnage figures are either not given or are naturally out of the question. Taking the larger amounts, the following list embraces the values exported:

Exports of Iron Manufactures.—Fiscal Years.

Articles.	1896-97.	1897-98.	1898-99.
Car wheels	$112,187	$129,446	$132,124
Castings, not elsewhere specified	989,432	804,975	1,055,525
Cutlery	178,381	156,558	195,040
Firearms	644,992	672,223	681,440
Builders' hardware	4,152,836	3,997,796	4,898,752
Saws	2,474,630	206,799	223,764
Tools, not elsewhere specified		2,223,737	2,719,856
Electrical machinery	not spec.	2,052,564	2,736,110
Metal working machinery	not spec.	4,618,683	6,491,586
Printing presses	649,710	974,515	847,006
Pumps and pumping machinery	not spec.	2,023,034	2,710,654
Sewing machines	3,340,241	3,136,364	3,264,344
Shoe machinery	not spec.	895,788	853,936
Locomotives	3,225,831	3,883,719	4,728,748
Stationery engines	323,438	398,570	335,061
Parts of engines and boilers	671,901	927,552	1,132,489
Typewriting machines	1,453,117	1,902,153	2,449,205
Pipes and fittings	not spec.	3,092,016	5,874,228
Safes	not spec.	87,614	145,349
Scales and balances	381,886	343,200	390,214
Stoves and ranges	325,625	382,980	503,739

While it is true that in some lines the metals probably enter quite heavily into the value, and that some of the items are somewhat foreign to the iron trade as generally understood, the general fact remains that there has been a very satisfactory increase in nearly all the figures. The grand total of the exports of iron and steel and manufactures thereof, not including ore, has jumped from $53,497,872 in the fiscal year 1896-97 to $70,406,885 in 1897-98 and to $93,715,951 in 1898-99, nearly doubling, therefore, in three years. Such a record is one which any industrial nation might well be proud of, but there is only too much ground for the fear that, temporarily at least, our advance will be checked. We look forward to some compensation for this in the future, through the effect of improvements in plant which are now being made and which will be developed during the present reign of prosperity. Our makers have learned to appreciate fully the advantages and opportunities of the export trade, and now that they are accumulating capital will use some of it effectively in preparing for the great campaign of conquest which must come when our home requirements are less urgent and strain our capacity less.

Progress of the Gold Standard.

Brazil, which cheapened its money by immense issues of irredeemable paper, is attempting to raise the value of its paper by reducing the quantity, together with measures designed to provide the Government with a supply of gold. Ecuador is accumulating a stock of gold, one of the means to which end is the sale of silver for gold, and both countries hope to get back to gold payments in a couple of years. Chili has made two or three efforts lately to return to the gold standard from which it slipped to the silver standard after the manner of all nations that tried to maintain bimetallism while silver bullion was depreciating and thence to paper. The most serious and promising effort was begun a couple of years ago, and, though internal and political troubles have interfered and retarded the execution of the policy then undertaken, it has not been abandoned, and if circumstances are not too unfavorable will be completed.

The proposal of the Government of British India was that it should contract the rupee currency and undertake

to redeem rupees in gold and thus establish the gold standard. The end aimed at is unanimously approved by the committee to which it was referred by the imperial government, but the committee objects to several of the means proposed for attaining it. By closing the mints to private coinage the value of the rupee has been gradually raised to 16 pence, above which it cannot go, because the government will sell sovereigns for 15 rupees each. The committee recommends that this valuation of 16 pence to the rupee and 15 rupees to the sovereign, which has been maintained for 18 months, be established permanently by making the sovereign a legal tender and opening the mints to the free coinage of gold, and that the Indian Government continue to sell rupees for gold, by means of which it has already acquired considerably over £2,000,000. But the committee objects to the Government's borrowing a quantity of gold and undertaking to redeem rupees in that metal, or to its melting down a part of the rupees.

The committee agrees with the Herschell Commission of six years ago, and with the great body of financiers and economists—though there are exceptions—that the depreciation of the rupee has not been useful to India, that it has entailed uncertainty and loss in India's foreign trade and that the value of the rupee compared with the pound sterling should be fixed. All the countries that have had depreciated currencies, with the exception of Mexico and some of the South American countries, are trying to get back to the gold standard, or have succeeded in doing so. The plan executed by Japan and Russia, and proposed by Chili and Ecuador, was not to raise the depreciated money unit to its former value, but to adopt a new gold coin of the same value as the current depreciated silver or paper unit. Thus prices were not affected by a change in the measure of value, but a measure of value was introduced which had an unchanging ratio of value to the money units of other countries. International trade demands that rupees, francs, marks, pounds, dollars and condors shall be fixed fractions, or multiples of each other, so that a price in one country can be translated into a price in any other country with certainty.

The Westinghouse Brake in Russia.

Something more than a year ago the Russian Government determined upon the advisability of applying air brakes to the freight trains upon the State railways. The Westinghouse Brake Company, Limited, of England, entered into negotiations with the Russian Government with a view to furnishing the air brake equipment, and when, about a year ago, sufficient assurance of the award of the business was received, with the condition that the brakes should be made in Russia, a new company—the Société Anonyme Westinghouse—was formed, a manufacturing site in St. Petersburg purchased, and the installation of a manufacturing plant begun.

About the close of the year 1898 an order for air brakes, amounting in value to about 4,000,000 rubles (about $2,000,000) was given this new brake company by the Russian Government. In January of the present year a congress of the engineers of all the private, as well as all Government railways, was assembled, and, after due consideration, it was decided to adopt the Westinghouse brake system as the standard for all the private as well as the Imperial lines.

On June 5 an Imperial decree was issued, announcing and ordering that 1, All freight locomotives and tenders, and a sufficient number of freight cars to secure brake control of all freight trains within the Russian Empire, must be equipped with air brake apparatus prior to January 1, 1903; 2, the Westinghouse air brake has been adopted and must be purchased for this purpose by all roads, private and State; 3, the use of any other kind or make of air brake than the Westinghouse is prohibited, with the provision, however, that a trial of any other brake system may be made, in connection with the Westinghouse, upon local trains. Each such trial must be conducted under the direction of the Imperial Brake Commission, for a period of at least three years, after which the suitability of the brake so tried must be considered by a congress of rolling stock representatives of all the railways, and the conclusions of this congress must subsequently be submitted to Imperial ratification before any such brake can be used in general service.

It is approximately computed that this decree requires the production of Westinghouse air brake apparatus for 350 locomotives and tenders and 1750 freight cars, during each month, for the next three and a half years, the total purchase amounting to from $12,000,000 to $15,000,000. This volume of business so much exceeds that contemplated in establishing the new Westinghouse works at St. Petersburg that, although it has been in operation but about two months, steps have already been taken to enlarge the plant to double its present capacity.

The Paris Exposition.

F. J. V. Skiff, director in chief of the Exhibit Departments for the Commissioner-General of the United States to the Paris Exposition, has just reached New York from Paris. He brings with him much information, including especially the following detailed statement of the progress and present condition of the work and buildings at the Paris Exposition:

As to the rumors that the palaces and buildings will not be completed in time for the opening next April, there is no truth in such statements. Work on the National Building of the United States is progressing rapidly. The foundations are completed and the large beams for the main floor were on the ground when I left Paris. By this time the carpenters are at work erecting the wooden frames. All the other nations have commenced their buildings. These pavilions of foreign Powers will rise on the left bank of the Seine. The site destined for them extends from the bridge of the Invalides to the bridge of Alma. This part of the river bank just now presents a scene of interesting activity. Everywhere rise the piles intended to support future buildings, and in many places they are already sunk in the river. On every side the frame works appear, sketching vaguely the silhouettes of the grand palaces that are to be. Workmen are seen everywhere tearing up the paving stones of the banks and sinking piles.

On the Champs de Mars all the buildings have their iron work up. The floors are partly laid in the Gallerie des Machines and the transverse gallery is commenced. In the Palace of Social Economy and Navigation and Forestry, along the river, the heavy framing is up and plastering commenced.

On the Esplanade des Invalides the railway station is entirely finished. All the iron work of the buildings on the Esplanade des Invalides is finished and part of the roof on the Liberal Arts Building is in place and part of the staff work of this building is done.

Nearly all the concessionaires and colonial buildings on the Trocadero grounds are commenced, and "Old Paris," on the same bank, is very nearly completed.

Work on the Army and Navy buildings has just commenced. The main iron dome of the Palace of Mines is nearly complete. In the palace devoted to textiles the transverse gallery between this palace and the Palace of Mining is commenced. The garden *façade* to this building is plastered and the roof is completed.

The Alexander III Bridge is progressing rapidly. This bridge, in the decorations, will unite the work of the best known sculptors in the world. The principal work now going on with the bridge is the riveting of the plates together which make the foundation for the roadway.

In the Champs-Elysees, the walls of the small Palace of Fine Arts are finished, the roofs outlined and the work on the main entrance is nearing completion. The Grand Palace of Fine Arts has suffered no delay, and crowds of workmen are constantly busy pushing the magnificent building to a finish.

Work on the Palace of Electricity is being pushed with energy. Most of the masonry construction on this building is finished, and five large trusses are up at the south end. The Salle des Fêtes, or Festival Hall, of this exposition will hold over 20,000 people. It will cut the Gallery of Machines in two equal parts. The hight of the gigantic hall will reach nearly 150 feet, and the large glazed bay will be 150 feet in diameter. This hall is so arranged as to be able to turn it into a hall for congresses or a concert hall or a ball room. Work on it is going ahead with vigor. The hall will be lighted with 5000 incandescent lamps, and the Horticultural Palace will be a marvel, with the park, when all of the flora of the world will be represented. One of the features of the monumental Gate of Entrance to the Exposition Grounds will be the grand effects of its electric lighting. This gate will bear 38 arc lights and 3200 incandescent lamps. In the Champs de Mars, I think I can safely say, in five palaces out of six, the building operations are three parts finished.

Iron Ore in 1898.

WASHINGTON, August 1, 1899.—The United States Geological Survey has received the annual report on the production of iron ore for 1898, prepared by John Birkinbine of Philadelphia. The statistics and comments are of more than usual interest, owing to the fact that the industry reached its highest development last year. The report is also of special value because of the important commercial data not previously covered. Through the courtesy of the Survey, *The Iron Age* is enabled to present the following abstract:

The year ending December 31, 1898, recorded the maximum iron ore production for the United States, a total of 19,278,369 long tons. This was 1,760,323 long tons, or 10 per cent., in excess of the previous maximum of 17,518,046 long tons, produced in 1897. This is also a greater amount than has been mined by any other country in one year, being over 1,250,000 tons above the total recorded for Great Britain in 1880, when 18,026,049 long tons were mined. It should also be borne in mind that the ores of the British Isles averaged lower percentages of metal than those exploited in this country, and therefore represent a smaller pig metal product.

This increased output was principally from the State of Michigan, which in round numbers added two-thirds of the one and three-quarter millions excess credited to 1898.

The output of iron ore in the United States compared with previous years is illustrated by the following figures: 1889, 14,518,041 long tons; 1890, 16,036,043; 1891, 14,591,178; 1892, 16,296,666; 1893, 11,587,629; 1894, 11,879,679; 1895, 15,957,614; 1896, 16,005,449; 1897, 17,518,046, and 1898 produced 19,278,369 long tons.

The total in ten years aggregates 153,668,714 long tons, an average of 15,366,871 long tons per annum. This record represents the quantities of ore mined in each year and not the amounts shipped. A number of large producers carry little or no stock, others accumulate stock during winter and draw upon these reserves during the shipping season. In the former class are as a rule open cut mines; while many of the mines wrought underground accumulate stock from development work or from actual exploitation when shipping is not practicable.

Few of the mines in the Southern States carry stocks of ore, and mineral is also mined from the Cornwall Hills in Pennsylvania as it is demanded by local furnaces. At many of the Lake Superior mines enormous stock piles accumulate during the suspension of lake navigation, but while the shipping season lasts ore is sent to lower lake ports more rapidly than it is consumed, the receiving docks on Lake Erie having had on storage a total of 5,900,000 tons of ore.

Of the different varieties of iron ores the red hematites contributed 15,997,536 long tons, or 83 per cent. of the total, an increase of 1,584,218 long tons, or 11 per cent. of the 1897 output of 14,413,318 long tons. The brown hematite amounted to 1,987,482 long tons, or 10.3 per cent. of the total, an advance of 25,528 tons, or 1.3 per cent. The product included 1,237,978 long tons, or 6.4 per cent. of magnetite, an increase over the 1897 output of 1,059,479 long tons of 178,499 long tons, or 16.8 per cent.; the balance, 55,373 long tons, or 0.3 per cent., was carbonate, a decrease of 27,922 long tons, or 33.5 per cent., from the 1897 total of 83,295 long tons.

The following table indicates the amounts of the various classes of ore produced by the different States in 1898. The classification is not mineralogically exact, for local conditions affect the nomenclature of some ores, and in deposits where several varieties of ore are mined no attempt is made to separate the product into classes:

Production of Iron Ores in 1898.—Long Tons.

States.	Red hematite.	Brown hematite.	Magnetite.	Carbonate.	Total.
Michigan	7,192,376	.....	154,470	....	7,346,846
Minnesota ...	5,963,509	.....	.....	....	5,963,509
Alabama	1,853,111	548,637	.....	....	2,401,748
Pennsylvania..	13,975	142,725	614,818	1,564	773,082
Tennessee ...	284,616	308,611	.....	....	593,227
Virginia	2,963	554,750	.....	....	557,713
Wisconsin ...	509,645	.....	.....	....	509,645
Colorado	10,070	302,368	6,042	....	318,480
New Jersey...	.....	.....	275,438	....	275,438
New York....	6,400	14,000	155,551	4,000	179,951
Georgia and No. Carolina.	79,125	78,869	2,089	....	160,083
Montana, Nevada, New Mexico, Utah, Wyoming ...	18,833	7,566	29,570	....	55,969
Missouri	50,000	.....	.....	....	50,000
Ohio	.....	.....	.....	43,868	43,868
Kentucky	12,913	.....	.....	....	12,913
Connecticut and Massachusetts.....	.....	20,251	.....	....	20,251
Texas	.....	9,705	.....	....	9,705
Maryland	.....	.....	.....	5,941	5,941
Totals...	15,997,536	1,987,582	1,237,978	55,373	19,278,369

The continued increased production of red hematite will be noted, for owing to its prevailing high percentages of iron and ease of smelting it, it is preferred by many blast furnace managers. The enormous development of the red hematites, which predominate in the Lake Superior region, and the liberal exploitation of this class of mineral in Alabama have done much to encourage this favoritism.

The brown hematite ores have in ten years declined in importance less than the other varieties, the output in 1898 being but 500,000 tons less than in 1889, while in a similar space of time the magnetite mined has decreased about one-half, or 1,250,000 tons, and the carbonate ore to one-eighth of the 1889 product of 432,251 long tons.

The Lake Superior Region.

The Lake Superior region has materially increased its former maximum output of 12,205,522 long tons in 1897, the production in 1898 being 13,779,308 long tons. The amount mined from the various ranges during the past two years has been as follows: Marquette, 1897, 2,673,785; 1898, 2,987,930; Menominee, 1897, 1,767,220; 1898, 2,275,664; Gogebic, 1897, 2,163,088; 1898, 2,552,205; Vermillion, 1897, 1,381,278; 1898, 1,125,538; Mesaba, 1897, 4,220,151; 1898, 4,337,538. In these figures the ranges have been placed according to date of their opening, the Mesaba range, the youngest, with its easily won ores, being the largest producer. The ores from this district, while generally of desirable chemical composition and rich in iron, are handicapped to some extent by the fineness of the fires, many furnace men using them but moderately as mixture with the harder ores from the other ranges.

The next largest producer, the Marquette range, contributed 2,987,930 long tons in 1898. Instead of, as has been frequently predicted, declining in output because of competition with other ranges, the Marquette range shows a constant increase since the year 1894.

The Ludington mine, on the Menominee range, which was filled with water for a number of years, is now being actively operated by the Chapin Mining Company, and several mines which were idle have resumed operations, aiding in swelling the total for the district.

The Gogebic and Vermillion ranges only did not produce their maximum in 1898 and these yielded outputs in advance of the average for a series of years.

A feature of the year 1898 was the concentration of a number of the larger producing mines, most of which were purchased or leased by important consuming interests.

A unique deposit of iron ore is being actively exploited at the Gundy mine on the Marquette range. Charles Foote, the president, describes this ore as "a hard ore, which seems to be growing better as depth is obtained in the mine. While not strictly a magnetite, it cannot be classed blue hematite. There seems to be a large deposit of it."

The increased demand for iron ore, which caused practically the entire output of the Lake Superior region to be purchased shortly after prices were fixed by the Bessemer Ore Association, may encourage exploitation of old or inactive mines, and add temporarily to the prosperity of the region. The portion of the 1899 output not immediately sold will command higher prices than the ores under contract; for the Mesaba range, contracts at prices practically equal to those obtained for the standard Bessemer have been made for non-Bessemer ores of that range. The advance in the price of pig iron has been thus far of more advantage to the blast furnaces than to the iron mines, as the greater portion of the iron ores of the Lake Superior region for the year 1899 were sold at an advance of but about 15 cents above prices for 1898.

Prominent Iron Ore oducers.

The concentration of work upon limited areas and the exploitation on a liberal scale of large deposits results in a comparatively small number of mines contributing the bulk of the iron ores; 82 mines (or groups of mines under one local management) produced 17,092,118 long tons of iron ore in 1898, equivalent to 208,440 long tons per mine on the average. The combined output of these 82 plants was 88.7 per cent. of the total production for the year. Next to this record is that of 1897, when 85.64 per cent. of the total iron ore mined was obtained from 73 of the larger mines.

Of the 82 prominent producers in 1898, 4 contributed between 600,000 and 700,000 long tons; 4 between 500,000 and 600,000 long tons; 5 between 400,000 and 500,000 long tons; 5 between 300,000 and 400,000 long tons; 11 between 200,000 and 300,000 long tons; 27 between 100,000 and 200,000 long tons; 26 between 50,000 and 100,000 long tons. Of these large mines, 35 were located in Michigan, 19 in Minnesota, 12 in Alabama, 1 in Pennsylvania, 3 in Wisconsin, 4 in Tennessee, 2 in Virginia, 3 in New Jersey, 1 in Georgia, 1 in Colorado and 1 in New York.

Sixty-seven of these large mines produced red hema-

tite, with a total of 15,293,794 long tons. Five mines supplied 843,957 long tons of magnetite, 9 contributed 810,584 tons of brown hematite, and the remaining mine yielded 143,783 long tons of a mixture of red hematite and magnetite.

The following list gives (by permission) the production at most of the mines which contributed 50,000 tons or over of iron ore in the year 1898, arranged in the order of their output:

Name of Operator.	Production, long tons.
Norrie, Mich.:	
Norrie Mines	271,072
North Norrie	212,075
East Norrie	207,306
	690,453
Lake Superior, Mich.	666,424
Mountain Iron & Rathburn, Minn.	650,021
Chandler, Minn.	628,268
Fayal, Minn.	590,500
Cornwall, Pa.	584,341
Ishkooda & Spalding, Ala.	560,220
Mahoning, Minn.	520,751
Adams, Minn.	474,646
Chapin, Mich.	466,481
Cleveland Mining Company, hard ore	10,797
Hematite	
Lake	444,903
	455,700
Lake Angeline, Mich.	442,500
Minnesota Iron Company, Minn.	428,240
Biwabik, Minn.	383,180
Tilden (Gogebic), Mich.	378,723
Fossil, Muscado, Wares, Ala.	375,756
Lone Jack & Missabe Mountain, Minn.	349,763
Pewabic, Mich.	328,817
Aragon, Mich.	296,000
Genoa, Minn.	282,064
Newport, Mich.	266,283
Ludington, Mich.	248,941
Montreal, Wis.	242,501
Auburn, Minn.	235,631
Sparta, Minn.	226,203
Cliff's Shaft, Mich.	205,495
Sloss, Ala.	201,247
Pabst, Mich.	198,741
Brown Mining Company, Tenn.	184,346
Penn Mining Company, Mich.	181,178
Franklin, Minn.	150,591
Lawrence, Tenn.	144,368
Champion, Mich.	143,783
Aurora, Mich.	137,384
Crystal Falls, Mich.	131,492
Marquette, Ore (open pit), Mich.	122,765
Ashland, Mich.	122,107
Hull, Minn.	121,758
Duluth, Minn.	119,061
Commonwealth, Wis.	119,000
Pillsbury, Minn.	116,500
Republic & West Republic, Mich.	114,872
Salisbury, Mich.	113,820
Irondale, Ala.	111,498
Norman, Minn.	110,146
Alice, Ala.	104,544
Clifford, Ala.	104,430
Ohio, Minn.	101,607
Redding, Ala.	89,805
Iron Belt, Wis.	89,629
Sellers, Minn.	89,278
Cundy, Mich.	82,579
Clifton, Ala.	77,746
Hemlock River, Mich.	75,370
Allegheny Iron Company, Va.	75,097
Brotherton, Mich.	73,719
Champion, Ala.	72,009
Wharton-Hibernia, N. J.	71,936
Raimund, Ala.	66,293
Mansfield, Mich.	65,564
Embreville, Tenn.	65,000
Greeley, Ala.	57,282
Watts, Tenn.	52,986
Lower Wood, N. J.	51,101
Tilden (Marquette Range), Mich.	50,833
Total	15,137,367
Seventeen mines not reported by names	1,954,751
Grand total	17,092,118

Transportation of Iron Ore.

As has been previously stated, the greater portion of the ores from the Lake Superior region are shipped by water from the various upper lake ports to the receiving docks on Lake Erie and Lake Michigan. Of these shipping ports Escanaba, Mich., which ranks first as regards the amount of iron ore sent by vessel in 1898, is situated on Lake Michigan, the ore sent from it (2,803,513 tons) coming from the Menominee and Marquette ranges. Two Harbors, Minn., which ranks second, with a total shipment of 2,692,245 long tons, is 25 miles notheast of Duluth. The ore which it receives is forwarded from the Vermillion and Mesaba ranges. Duluth, Minn., at the extreme western end of Lake Superior, depends upon the Mesaba range for its shipping ores, and in the year 1898 2,630,610 long lons were sent to the lower lake ports. From Ashland, Wis., at the southern end of Chequamegon Bay, on the south shore of Lake Superior, 2,391,088 long tons were shipped in 1898 from the Gogebic range. Marquette, Mich., on the southern shore of Lake Superior, the oldest of the lake shipping ports, in the last three years, owing to the completion of the Lake Superior & Ishpeming Railroad, has shown augmented shipments, those for 1898 being 2,245,973 long tons, all of which came from the Marquette range. Gladstone, Mich., on Lake Michigan, and Superior, Wis., on Lake Superior, also shipped relatively small quantities of ore.

W. L. C.

OBITUARY.

JOSEPH LONGSTRETH.

The death is reported from Para, Brazil, of Joseph Longstreth of Germantown, Pa., who was engaged in superintending the erection of a number of locomotives built for the Brazilian Government by the Baldwin Locomotive Works of Philadelphia. Mr. Longstreth expired on July 28 from yellow fever. He was born in Philadelphia 35 years ago, and entered the Baldwin Locomotive Works as a young man, after graduation from Harvard University.

JOSEPH W. MORGAN.

News has just been received at Wilmington, Del., of the death in the Klondike, on February 27 last, of Joseph W. Morgan, formerly a member of the firm of Hare & Morgan, bolt and nut manufacturers, of Wilmington. After the dissolution of the firm 12 years ago, Mr. Morgan engaged in business in St. Paul, Minn. A year ago he started for the Klondike with a party of gold seekers. He was 56 years of age.

PERSONAL.

Col. John Lambert, president of the American Steel & Wire Company, and family, and Col. Isaac L. Ellwood, member of the executive committee of the same company, have gone to Europe expecting to be absent for two months. On the evening prior to Colonel Lambert's departure from his home at Joliet, Ill., he was serenaded by a large number of the company's employees. Speeches were made, which were very complimentary to that gentleman and he was referred to as the next United States Senator from Illinois.

W. W. Rockhill, late United States Minister to Greece, has been appointed Director of the Bureau of American Republics at Washington.

Frank S. Slocum, chief chemist at the Jones & Laughlin Works, South Side, Pittsburgh, has been appointed superintendent of the open-hearth department. His brother, Harry Slocum, succeeds him as chief chemist.

W. B. Foote of the Edgar Thomson Steel Works has been appointed superintendent of the Juniata Furnace.

Information Wanted.— A correspondent wishes address of parties producing machinery for making strawberry boxes.

J. E. Bleckmann of Solingen, Germany, wants catalogues and prices on machinery for manufacturing solid back shovels and spades.

Sea Embankment for the Hodbarrow Iron Mines.— Particulars have just been published of a gigantic engineering scheme at Hodbarrow iron mines, in the south of Cumberland, England, in the form of a great sea embankment intended to keep the sea out of the workings of a very valuable mine. Some ten years ago a very large sum of money, approximating nearly $1,000,000, was spent in the building of a sea wall at the same place. It is now proposed to go further seaward with a more ambitious scheme. The new wall will be in the form of an embankment with a puddled trench, and with rough squares of concrete tumbled higgledy piggledy as a means of breaking the force of the wash from the sea. The new embankment will be 6750 yards long and will inclose 170 acres of land, under which the new extension of the mine will be worked. Ore has been proved to exist in vast deposits under this area, and although the cost of the proposed scheme will probably be from $2,000,000 to $2 500,000 it is well worth the enterprise, as Hodbarrow ore is not only the best hematite in England, but is of the most uniform quality and realizes in the market several shillings a ton more than any other description.

A paper by Prof. G. F. Sever and R. A. Fleiss read at the recent meeting of the American Institute of Electrical Engineers, gives some interesting information regarding the relative economy of horse and electric delivery wagons. The authors have found that the average delivery wagon covers a distance of about 11,268 miles per year, at a cost of 13.86 cents per mile for a two horse vehicle. An automobile will cover the same distance for 2.65 cents per mile less, equivalent to $298.60 per year. A further advance is the higher speed of the electric vehicles, enabling the deliveries to be accomplished with greater celerity.

MANUFACTURING.

Iron and Steel.

The Ætna-Standard Iron & Steel Company of Bridgeport, Ohio, have put their converting mill at Mingo Junction in operation and the new billet mill is expected to be running in a few days. It is the intention of the company to erect a third blast furnace at Mingo Junction.

The Logan Mfg. Company have been granted a charter of incorporation and will erect at Phœnixville, Pa., a foundry for the manufacture of light and medium weight steel castings. The buildings will at present be one main building, 92 x 98 feet, having steel framing and corrugated iron walls and roof, and a small office building. The contract for the main building has been awarded to the Phœnix Iron Company of Phœnixville and the office building to a local concern.

The La Belle Iron Works of Wheeling, W. Va., manufacturers of cut nails and skelp, will probably make some additions to their skelp plant at Steubenville, Ohio. The exact nature of these improvements has not as yet been determined.

The Coshocton Rolling Mill Company, Coshocton, Ohio, have been incorporated, but no definite plans have been made. It is certain that neither black plate nor tin plate will be manufactured. The capital stock is $100,000, and the purpose is to manufacture and sell rolled iron and steel in any and all its forms.

Jacob S. Coxey of Massillon, Ohio, has bought the buildings formerly occupied by the Spang Steel & Iron Company, at Etna, Pa., near Pittsburgh. The buildings are being dismantled and will be used by Mr. Coxey in the erection of a new open hearth steel casting plant. The exact location of the plant has not yet been determined upon, but we are advised there are quite a number of cities that are negotiating for it. The plant will be equipped with one 25-ton and two 15-ton open hearth steel furnaces, one 50-ton, one 25-ton and two 15-ton electric traveling cranes. Mr. Coxey states that his experience as a producer of silica sand, used in the manufacture of iron and steel, has led to his determination to have a steel casting plant under his own control. He sells silica sand to the Carnegie Steel Company and the Bethlehem Steel Company, and supplies nearly all the foundries in the Pittsburgh district and a large percentage of foundries in other sections with silica sand. As soon as the location of the new plant has been decided upon work on its construction will be commenced at once.

The Kidd Brothers & Burgher Steel Wire Company, manufacturers of Kidd polished drill rods, whose plant is located at McKee's Rocks, near Pittsburgh, have purchased 1¼ acres of ground from the Pittsburgh, Chartiers & Youghiogheny Railroad. The property is situated on Island avenue, McKee's Rocks, adjacent to their works. This firm are building a new annealing furnace and contemplate adding machinery which will somewhat more than double their present capacity. This expansion has been necessitated by the growth of their business much beyond their present capacity.

News comes from Pittsburgh that the National Wire Company of New Haven, Conn., have contracted for a rod mill, capacity 100 tons in ten hours. The company being large users of rods, it is safe to say that there will be no surplus for the outside market. Geo. R. Wales, president of the National Wire Company, being largely interested in a certain company who are now making about 150 tons of steel per day, will probably amalgamate the two companies into one concern.

The strike at the Andrews Works, Mahoning Valley Works and Brown-Bonnell Works of the Republic Iron & Steel Company, at Youngstown, Ohio, has been settled and the men have returned to work. The settlement was made on a basis of what was paid in 1892, when heaters were receiving about the same price as they do now. The strike did not affect any men working under the Amalgamated Association scale.

The Danville Rolling Mill Company have been incorporated under the laws of New Jersey, with a paid in capital of $150,000, and have purchased the Danville Rolling Mills & Nail Works, at Danville, Pa. Extensive improvements have recently been made to the plant and the capacity doubled. The works will be in operation within ten days. C. R. Baird is president, N. H. Wagner, secretary and treasurer, and James Mallen, superintendent. The main office of the company will be in the Bullitt Building, Philadelphia.

The Pennsylvania Malleable Steel Company of Pittsburgh have been organized and will erect a plant at McKee's Rocks, adjoining the works of the Pressed Steel Car Company.

The Falcon Iron & Nail Company, Niles, Ohio, have notified some of their employees of an advance of 10 per cent. in wages.

The Reading *Herald* states that the Reading Iron Company, Reading, Pa., have announced another advance in wages in their several departments, being the fifth advance made by the company since March 1. The percentage is not given.

The Pennsylvania Nut & Bolt Works of Lebanon, Pa., have announced another increase in wages for the employees of the puddle mill, making the rate $4 per ton. This last advance is 25 cents per ton and is the sixth raise since April 1. The schedule goes into effect August 1.

At the recent annual stockholders' meeting of the Belfont Iron Works, Ironton, Ohio, the following officers were elected: John G. Peebles, president; B. H. Burr, vice-president and general manager, and S. G. Gilfillen, secretary and treasurer.

The Franklin Furnace of the Lackawanna Iron & Steel Company, at Franklin Furnace, N. J., was blown in on July 31.

The Thomas Iron Company will probably blow in on the first of next month furnace No. 3, at Hokendauqua, Pa. This is practically a new furnace and is expected to make 1300 to 1400 tons per week.

Machinery.

The Keystone Driller Company of Beaver Falls, Pa., are very busy in all departments and expect to add another steam hammer to their forging department.

The Champion Saw & Gas Engine Company, Beaver Falls, Pa., manufacturers of gas and gasoline engines and saws, have a large number of orders for gas engines on hand. They have recently closed for one 30 horse-power engine for the People's Water Company, Beaver Falls, Pa.; one 30 horse-power for Monessen Water Company, Monessen, Pa.; one 30 horse-power for Granite Wall Plaster Company, Youngstown, Ohio; two 30 horse-power engines for the National China Company, East Liverpool, Ohio. They also have a number of other orders on their books. This concern advise us that their saw business has more than doubled in 1899 over the corresponding months in 1898.

The Springfield Machine Tool Company, Springfield, Ohio, have made a number of improvements in their plant and product by the erection of additional buildings to the former and new features on their lathes. The demand for the latter continuing good, while their foreign trade is on the increase, they are operating their plant 10¼ hours per day.

In May the Frank Mossberg Company started a machine shop at Attleboro, Mass., to do light and fine machine work and to build special machinery. In the latter they secured a good deal of work and they are now experimenting on electric motor carriages for a large corporation. They are now erecting a factory, to be completed by October, which will give them over 20,000 square feet of floor space. In the meantime they will purchase several light machine tools, punching presses and polishing machinery.

The Reliance Machine & Tool Company, Cleveland, Ohio, have recently shipped bolt cutters to the American Ship Building Company of Lorain, Ohio; the Southern Missouri & Kansas Railroad Company, Point Giradeau, Mo., and the L. P. & J. A. Smith Company, Cleveland, Ohio.

The Hawley Down Draft Furnace Company, through their Pittsburgh office, have recently installed 1000 horse-power for the W. Dewees Wood Company, McKeesport, Pa.; 560 horse-power at the Oliver rod mill of the American Steel & Wire Company, 300 horse-power at the new works of the Mesta Machine Company at Homestead and 500 horse-power in the new Empire Building, Liberty and Fifth streets, Pittsburgh.

The North Pittsburgh Foundry Company of Pittsburgh have made application for a charter of incorporation, with a nominal capital of $25,000. Plans have been drawn for the construction of a new foundry in lower Allegheny, on the site of the former plant of the Carlin Mfg. Company, which was destroyed by fire. The incorporators of the North Pittsburgh Foundry Company are David Carlin, formerly president of the Carlin Mfg. Company; Wm. E. Lee, Rudolph Solomon, C. C. Henry and Watson C. Adair.

The Niles Boiler Company, Niles, Ohio, have increased their capital stock from $25,000 to $50,000. At the recent stockholders' meeting of the company the following officers were elected: President, R. G. Sykes; vice-president, John E. McVey; general manager, J. H. Orwig; secretary and treasurer, D. J. Finney.

The Draper Company, Hopedale, Mass., are building an extension, 270 x 150 feet, to their iron foundry, and plans are being prepared for an addition 150 x 120 feet, four stories high, to the machine shop. The company's present working force numbers upward of 1500 hands, and by December 1, it is said, 2000 employees will be on the pay roll.

The Reed Smokeless Furnace Company of Indianapolis, Ind., have filed articles of incorporation. The capital stock is $100,000 and the company are to make burners and furnaces. The directors are Lyman W. Louis, Chas. McGuire, Frank M. Reed, H. Cohen and O. T. Bryan. The officers are Lyman Louis, president; Frank M. Reed, vice-president O. T. Bryan, secretary, and Chas. McGuire, treasurer.

Pittsburgh people who have the manufacture of a patent water heater in view have offered $5500 for the vacant plant of the Akron Silver Plate Company, at Akron, Ohio, and will probably secure it. The plant was originally appraised at $15,000.

The new owners of the property of the late Elgin Sewing Machine & Cycle Company, at Elgin, Ill., are the Howard H. Brown Automobile Company, incorporated with a capital stock of $100,000. Their offices are in the Baltimore Building, Chicago. The plant is well equipped for the manufacture of automobiles and work is to be started at once.

The W. H. Nicholson Company, Wilkes-Barre, Pa., report a very healthy business during this year. They have just sent

shipments of their expanding lathe mandrels to Austria, Germany, Belgium and Sweden, in addition to their usual shipments to England. They are experiencing an increasing demand for the Nicholson compression shaft coupling. An extension to the machine shop has just been completed.

Curry & Vannan, Danville, Pa., have been full of work since the beginning of the year. At present they are building a roll train for the Scranton Bolt & Nut Company and also manufacturing architectural iron for a number of firms in New York City.

The Ansonia Mfg. Company, Ansonia, Conn., Charles H. Jockmus, proprietor, announce that they have excellent facilities for manufacturing brass goods of various kinds, and advise us that they make a specialty of automatic brass screw machine work for lamp, gas, electrical, telephone, fire alarm, battery, piano and general mechanical purposes.

The Sandwich Enterprise Company of Sandwich, Ill., have just brought out a line of 12-inch float valves for railroad and city water service.

Hardware.

Elwood, Ind., is to have a factory for the manufacture of lawn mowers under the patent of Olive D. Pickett of Richmond, Ind.

George William Hoffman, 295 East Washington street, Indianapolis, Ind., manufacturer of the U. S. metal polish and other specialties, reports business good, a large shipment of the polish having just been made to Canada. Mr. Hoffman has put in additional machinery, so as to enable him to fill orders promptly.

At the annual meeting of the stockholders of the Gilbert & Bennett Mfg. Company, held at their office, Georgetown, Conn., July 25, the following directors were elected: Edwin Gilbert, David H. Miller, Samuel J. Miller, George H. Brown, Edward F. Jones. Edwin Gilbert was elected president and treasurer; David H. Miller, vice-president and secretary; Samuel J. Miller, superintendent. The capital stock of the company was increased from $300,000 to $500,000, and the wages of all employees in both Eastern and Western factories were increased 10 per cent.

G. A. Milbradt & Co., St. Louis, Mo., report that their step-ladders are finding favor with merchants in various lines of business, and have recently received a letter to this effect from the proprietor of an especially well equipped shoe store.

The Garland Chain Company, Rankin Station, Pa., leading manufacturers of proof chain and galvanized pump chain, inform us that they have been having for some time past a heavy run on galvanized proof chain. This is one of their specialties, as they are, they advise us, the only chain manufacturers who have their own galvanizing plant, and as the galvanizing is done by an improved process they are enabled to turn out first-class work and to fill all orders for galvanized chain promptly. This company make all sizes of coil chain from 3-16 to 1¼ inch, and have lately increased their capacity very materially.

Miscellaneous.

A charter has been granted to the Commercial Iron & Wire Company of Hamilton County, Tenn., with $10,000 capital stock. The incorporators are J. A. Patten, F. G. Stanfield, Paul Manker, G. W. Patten and J. E. Annis.

The Holmes Metallic Packing Company, Wilkes-Barre, Pa., are making packing for the International Power Company, Providence, R. I.; the Philadelphia & Reading Coal & Iron Company, the American Steel & Iron Company, Anderson, Ind., and the Ohio works National Steel Company, Youngstown, Ohio.

Roechling'sche Eisen und Stahlwerke of Carlshuette bei Diedenhofen, Germany, have recently purchased from Uehling, Steinbart & Co., Limited, of Carlstadt, N. J., a system of 12 and a system of 8 gas composimeters. These instruments furnish a continuous analysis and record of the percentage of carbon dioxide in gas. The group of 12 instruments are to be used in connection with a battery of 12 boilers and the group of 8 on 8 Cowper stoves, thereby furnishing a complete record of the combustion in each stove at all times.

The Griffin Mfg. Company have been organized at Pittsburgh for the purpose of manufacturing steel tools. The plant will be located in Allegheny, and James C. Griffin is president and manager, while W. A. Crawford is secretary and treasurer. The capital stock is $50,000.

The stockholders of the Wheeling Natural Gas Company of Wheeling, W. Va., at a special meeting held last week, decided to increase the number of shares from 18,800 to 20,000. The shares are to remain at par value of $25 each. The affairs of the company are said to be in a very prosperous condition and the increased capitalization will be issued to the stockholders as a dividend.

The Reese Hammond Company, manufacturers of fire brick, whose plant is located at Bolivar, Pa., have given their employees an advance in wages ranging from 5 to 10 per cent. This concern are having plans prepared for the building of about 100 four and five roomed brick houses, to be built at Bolivar. The houses are to be used as tenements for the firms' employees.

Trade Publications.

The White Gasoline Engine.—The Globe Iron Works Company, Minneapolis, Minn., issue a handsome catalogue descriptive of their White gasoline engine. They build both horizontal and vertical or marine types of this engine, the horizontal from 2 to 16 horse-power and the vertical from 1 to 32 horse-power. The horizontal is built upon the alternating or four-period principle and the vertical upon both the single cycle and four-period principles. Illustrations are given showing these engines operating pumps, mounted on boats, &c. Numerous testimonials from users are printed.

Taper Turning and Stud Lathe.—The Grant Machine Tool Works of Cleveland, Ohio, have prepared a circular descriptive of their improved taper turning and stud lathe. This swings 12½ inches over the ways and 7½ inches over the carriage, the greatest distance between centers being 20 inches. The back gears are 5 to 1 and the cone has four steps for a 2-inch belt. The head and foot block are bolted to a swivel plate which is securely fitted to the bed and held in position by gib bolts, and can be adjusted to any taper up to 1 inch per foot. The centers of the head and foot block always remain in line, so that work of different lengths may be turned of exactly the same taper without resetting The carriage has an automatic stop motion with drop feed, which obviates the necessity of slackening any friction device before running the carriage back.

Automatic Gear Cutters.—F. H. Bultman & Co. of Cleveland, Ohio, describe in a neat catalogue their full automatic universal gear cutting machines. It is stated that their 36-inch machine will carry the full limit of any gear cutter of Brown & Sharpe make up to 2 diametric or 1½-inch circular pitch of 5 inch diameter, and is readily regulated to suit any pitch or material. Among the many excellent features of this machine is a patented safety device which prevents the blanks from being spoiled. The device is positive in its action and the cutter will absolutely not enter the work unless it is properly spaced. All delicate and intricate mechanism has been studiously avoided in the design and strength and solidity secured where needed.

Annealing Furnaces.—W. S. Rockwell & Co., 26 Cortlandt street, New York, have issued a catalogue dealing with their annealing and hardening furnaces, which are made in various sizes and patterns for treating dies, machine parts, wires, sheet metal, &c. Their single end annealing furnace is well adapted to the annealing of brass and copper in coils, sheets, bars, tubing, wire, &c. It is called "single end" because it has but one working door, the material being charged and withdrawn from the same end. It is strongly built, has a fire chamber in each end and can be operated with oil, coal, gas or wood fuel. The floor is paved with iron tiles and the side walls of the chamber are protected by iron "wearing blocks." The chamber door and fire doors are lined with fire brick laid in asbestos cement. In their double end furnace the material is charged at one end and withdrawn from the other, and the heat may be so regulated as to be greater at the discharge end or it may be kept uniform throughout. Both of these furnaces are built with a working chamber from 5 to 10 feet wide and from 12 to 30 feet long. Their copper annealing and scaling furnace has a scaling vat underneath and is used for scaling copper sheets. This type is made either single or double ended. The diffusion of heat is very uniform, especially when operated with oil, which fuel is best suited to the character of this work.

Cane Mills.—The George L. Squier Mfg. Company of Buffalo, N. Y., have prepared circulars dealing with their Cuba and Porto Rico cane mills, which are of the heaviest and strongest construction, and in which the distribution of metal is such as to secure a correct proportion in all parts. The rolls are of hard cast iron and the shafts of forged iron or steel, at the option of the purchaser. The shafts are extremely large in size, to guard against breakage, and are fitted into the rolls by hydraulic pressure and keyed. The journals are of large diameter and good length of bearing. The housings are of modern open end construction, of massive proportion, made of the best quality of cast iron, and are carried by a heavy bed plate. The journal boxes are of bronze.

Oiling Devices.—Oiling devices for motor vehicles, engines, bicycles and machinery, &c., are described by the makers, the Bowen Mfg. Company of Auburn, N. Y. Their oil cups close automatically and each style uncovers a clean surface when opened for oiling. This arrangement insures the perfect cleanliness of both the oil and the oiled surfaces.

The Iron and Metal Trades.

The rising tendency continues unabated, and it is a question whether delays in deliveries have not actually become worse than better lately. Scarcity of labor, scarcity of Coke, of Pig Iron, Billets, Wire Rods, is troubling makers from step to step upward to the final consumer.

Sales for delivery during the first half of 1900 and beyond are growing more numerous, thus showing that many buyers are willing to pay present prices for the certainty of securing their supplies. So far as deliveries during the balance of the year are concerned, the maintenance of prices is conceded by the majority, while every day brings accessions to the ranks of those who hold that we are to see a considerably higher level yet for urgent requirements.

This seems to be the situation in Pig Iron, both in Foundry and in Bessemer grades, and for delivery during the next few months there has been a further advance. Pittsburgh records sales of Bessemer Pig as high as $21, Valley furnace.

Steel continues exceedingly scarce and high prices are being paid for prompt shipments, notably for Open Hearth stocks. It is significant that one rolling mill has just given an order for the importation from England of 750 tons of Open Hearth Billets, and that other inquiries are at hand. Orders for foreign Open Hearth Wire Rods were placed by Screw makers some time since, and there are indications that additional quantities may be drawn from Europe.

In the Plate trade the starting up of plants both East and West has increased the supply. In the West a slightly easier feeling has developed.

In Bars, Hoops, Pipes, &c., the markets are still active and firm. There are export orders in the market for the first two, but prices are prohibitive.

While the capture of many large bridge orders for foreign markets has attracted a good deal of general attention, striking progress has been very quietly made in extending a market for buildings and sheds. American firms have asked and obtained the designs proposed, and have remodeled them in accordance with practice here, guaranteeing ability to resist the loads specified. By this means the structures have been much lightened, and it has been possible to secure work at a higher per pound rate than that offered by European builders. We understand that buildings have been thus captured, not alone for the West Indies, Chili, Peru and Central American States, but also for European countries. We learn that one firm alone placed contracts aggregating 3000 tons in July.

Among the bridge orders in the market we note eight bridges for Japan. They were designed by American consulting engineers and will therefore be taken here.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Aug. 2, 1899.	July 26, 1899.	July 5, 1899.	Aug. 3, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$20.25**	$20 00	$18.50	$10.00
Foundry Pig, No. 2, Southern, Cincinnati	**18.00**	....	17.00	9.25
Foundry Pig, No. 2, Local, Chicago	**20.00**	19.50	18.50	11.00
Bessemer Pig, Pittsburgh	**21.25**	20.75	20.35	10.25
Gray Forge, Pittsburgh	**17.75**	17.50	17.00	9.00
Lake Superior Charcoal, Chicago	**22.00**	21.50	21.50	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**34 00**	34.00	32.50	14.50
Steel Billets, Philadelphia	**36.00**	36.00	34.00	16.25
Steel Billets, Chicago	36.80	.....	.. ..	15.75
Wire Rods, Pittsburgh	**43.00**	....	40 50	20.00
Steel Rails, Heavy, Eastern Mill	**30.00**	29.00	28.00	17.75
Spikes, Tidewater	**2.00**	2.00	1.85	1.40
Splice Bars, Tidewater	**1.90**	1.90	1.75	1.05
OLD MATERIAL:				
O. Steel Rails, Chicago	**15.50**	15.00	15.00	8.25
O. Steel Rails, Philadelphia	17.00	17.00	....	9.75
O. Iron Rails, Chicago	**19.00**	19.00	18.50	12.50
O. Iron Rails, Philadelphia	**21.00**	20.50	.....	12.00
O. Car Wheels, Chicago	*15.50*	15.50	16.00	11.50
O. Car Wheels, Philadelphia	17.00	16.50	....	9.75
Heavy Steel Scrap, Chicago	*13 50*	13.00	15.00	8.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	2.00	2.00	2.00	1.00
Common Iron Bars, Youngstown	**1.85**	1.85	1.80	0.95
Steel Bars, Tidewater	**2.20**	2.20	2.05	1.05
Steel Bars, Pittsburgh	2 00	2.05	2.00	0.90
Tank Plates, Tidewater	**2.70**	2.65	2.50	1.20
Tank Plates, Pittsburgh	**2.50**	2.50	2.40	1.07½
Beams, Tidewater	**2.15**	2.15	1.90	1.30
Beams, Pittsburgh	**2.00**	2.00	1.75	1.15
Angles, Tidewater	**2.15**	2.15	1.85	1.20
Angles, Pittsburgh	**2.00**	2.00	1.75	1.05
Skelp, Grooved Iron, Pittsburgh	**2.25**	2.35	2.15	1.05
Skelp, Sheared Iron, Pittsburgh	**2.60**	2.50	2.35	1.10
Sheets, No. 27, Chicago	**3.18**	3.20	3.05	2.00
Sheets, No. 27, Pittsburgh	**3.00**	3.00	2.85	1.85
Barb Wire, f.o.b. Pittsburgh	**3.10**	3.10	2.95	1.65
Wire Nails, f.o.b. Pittsburgh	**2.50**	2.50	2.35	1.25
Cut Nails, Mill	**2.20**	2.20	2.05	1.05
METALS:				
Copper, New York	**18.50**	18.50	18.25	11.50
Spelter, St. Louis	*5.50*	5.65	5.70	4.30
Lead, New York	**4.55**	4.55	4.50	3.92½
Lead, St. Louis	**4.55**	4.60	4.35	3.80
Tin, New York	**32.00**	31.75	27.37½	15.75
Antimony, Hallett, New York	*9.75*	9.75	10.00	9.00
Nickel, New York	*36.00*	36.00	38.00	34.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	**4.55**	4.55	4.05	2.80

Chicago. *(By Telegraph.)*

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, August 2, 1899.

The market continues wholly in favor of the sellers in every line. The demand is unusually good for midsummer. Wholesale Hardware merchants say they have never experienced such a summer trade as they are now enjoying.

Pig Iron.—No evidence of weakness is to be seen. Inquiries are increasing and prices are still advancing. Large consumers are buying for deliveries extending over the first six months of next year, and makers are frequently turning down orders, because they may be unable to make deliveries desired. A considerable part of the present demand for early delivery is coming from people whose requirements are running beyond what they had expected from others who cannot get delivery fast enough from makers with whom they have contracts. Some of the local makers of Iron are troubled by the scarcity of Coke, which prevents them from running to full capacity, and if the situation does not improve it is feared that one or more furnaces may be temporarily blown out. Lake Superior Charcoal, local and Ohio Irons have advanced during the week, the largest advance having been made on high Silicon Iron. We quote for cash as follows:

Lake Superior Charcoal	$22.00 to $23.00
Local Coke Foundry, No. 1	20.50 to 21.00
Local Coke Foundry, No. 2	20.00 to 20.50
Local Coke Foundry, No. 3	19.50 to 20.00
Local Scotch, No. 1	21.00 to 21.50
Ohio Strong Softeners, No. 1	22.00 to 22.50
Southern Silvery, according to Silicon	21.75 to 22.00
Southern Coke, No. 1	20.15 to 20.65
Southern Coke, No. 2	19.15 to 19.65
Southern Coke, No. 3	18.65 to 18.90
Southern Coke, No. 1 Soft	20.15 to 20.65
Southern Coke, No. 2 Soft	19.15 to 19.65
Foundry Forge	17.65 to 17.90
Gray Forge and Mottled	17.65 to 17.90
Southern Charcoal Softeners	20.00 to 22.00
Alabama and Georgia Car Wheel	21.00 to 22.00
Malleable Bessemer	22.00 to 23.00
Standard Bessemer	22.00 to 23.00
Jackson County and Kentucky Silvery 8 per cent Silicon	.... to 27.80

Bars.—The Bar Iron trade is proceeding without special incident, sales weekly running beyond the output of the mills. Prices of mill shipments of Common Iron

are unchanged at 1.85c. to 1.95c., Chicago. The acquisition of the Union Steel Company of Alexandria, Ind., by the Republic Iron & Steel Company is an important addition to their properties. The demand for Soft Steel Bars continues very good, with prices on mill shipments maintained at 2.05c. to 2.20c., Chicago. Hoops are quoted at 2.40c., case, for Bands. Jobbers are having a large business, fully as large as previously reported. They still have difficulty in keeping up assortments. Quotations on small lots have been advanced and Bar Iron is now quoted at 2.30c. upward, Soft Steel at 2.20c. upward, and Norway and Swedish Iron at 3.40c. to 3.50c.

Car Material.—Fresh orders are coming up for cars and new business is consequently somewhat better. Among the orders now in the market is one for 1250 cars.

Structural Material.—The most important piece of work now under negotiation is for the Hennepin Canal for aqueducts requiring about 1000 tons Structural. Buildings of moderate size will shortly be placed calling for 500 to 600 tons each. A somewhat better demand is noted for small lots. The high prices now prevailing and the slow deliveries by mills are, however, causing some disturbance in the building trade. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15 inches and under, and Angles 3 to 6 inches, 2.15c.; Beams, &c., 18 inches and over, and Angles over 6 and under 3 inches, 2.25c.; Tees, 2.20c.; Universal Plates, 2.65c. Store prices take the usual advance above prices for mill shipment.

Plates.—The local makers are unable to take any additional business, but report numerous inquiries. Sales of at least 10,000 tons could quickly be made for delivery during this year. Jobbers continue to report a good trade, with shipments to various sections. They quote 3.25c. from stock for Tank Steel and 3.50c. for Flange. Mill shipments for reasonably early delivery are quoted at 2.70c. to 2.80c., Chicago, for Tank, 3c. to 3.10c. for Flange, 3.15c. to 3.25c. for Marine, and 3.50c. to 3.55c. for Fire Box.

Merchant Pipe.—The situation remains in all respects as previously reported, the mills being far in arrears on deliveries, and local warehouse stocks being badly broken. Quotations on shipments of Merchant Pipe are continued at 50 and two 10's with no quotations now being made for mill shipments of Boiler Tubes. The demand for Boiler Tubes from warehouse is heavy and prices are unchanged. Merchant Steel Boiler Tubes are now quoted in small lots, 1¼ to 1¾ inches, inclusive, 40 per cent. off; 2 to 2¾ inches, inclusive, 50 per cent. off; 3 inches and larger, 55 per cent. off.

Sheets.—The demand for both Black and Galvanized Sheets has improved considerably and sales of good quantities have been made. Mill shipments of No. 27 Black Sheets are quoted at 3.18c. to 3.30c., Chicago, and Galvanized Sheets at 70 and 5 per cent. off, with 15c. freight allowance. Jobbers quote small lots of No. 27 Black Sheets at 3.25c. to 3.45c., and Galvanized at 70 per cent. off.

Merchant Steel.—A good demand is noted from the general trade, with contracts still being placed by implement manufacturers. Prices have again been advanced on Machinery and Tire Steel. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.90c. to 3.05c.; Smooth Finished Tire, 2.60c. to 2.75c.; Open Hearth Spring Steel, 3.20c. to 3.30c., base; Toe Calk, 2.95c. to 3.15c., base; Ordinary Tool Steel, 6½c. to 7½c.; Specials, 13c. and upward. Jobbers are asking the usual advances above mill prices.

Billets and Wire Rods.—The Illinois Steel Company's Joliet Works suffered some damage from fire on Saturday night, which, however, will diminish the production for only a few days, not being so serious as at first reported. Small sales of Bessemer Billets are being made by Eastern mills at $36.80, Chicago, with full extras. A sale of 5000 tons of Open Hearth Billets has been made at something over $40, Chicago. Small lots are quoted at $45. It is extremely difficult to get any kind of Billets, the local makers practically having none for sale. The demand is good for Wire Rods, but manufacturers are making but small sales and quote $45.

Rails and Track Supplies.—Numerous inquiries are being received for Rails of Standard Sections, but usually for deliveries which the mills are unable to make. A sale of 1800 tons was made for December delivery. Inquiries are now coming in for next year, railroad companies evidently believing that prices will not be lower. Manufacturers quote $31 on large lots and $32 to $33 on small lots. A good business is being done in Light Rails at $1.75 per 100 lbs. for small lots, and $30 per ton upward for large lots, according to weight of section. Track Supplies are quoted as follows: Steel Fish Plates, 1.70c. to 1.80c.; Iron Fish Plates, 2.50c.; Spikes, 2.50c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.15c.; Square Nuts, 2.90c. to 3c.; Steel Links and Pins, 2.55c to 2.60c.

Old Material.—A Southwestern road has sold 10,000 tons of Old Iron Rails, which are reported to have been bought for Youngstown delivery. A strong demand is noted for Old Steel Rails and Melting Scrap. A good trade is being done in other kinds of Old Material. The supply of Cast scrap is abundant. Dealers' selling quotations are as follows, per gross ton: Old Iron Rails, $19; Old Steel Rails, mixed lengths, $15; Old Steel Rails, long lengths, $15.50; Relaying Rails, $19 to $20; Old Car Wheels, $15.50; Heavy Melting Scrap, $13.50; Mixed Steel, $11.50. The following selling prices are per net ton: No. 1 Railroad Wrought, $16; Dealers' Forge, $11.50 to $12.50; Fish Plates, $17; No. 1 Mill, $8.50 to $9; Heavy Cast, $12 to $12.50; Stove Plates, $7.75; Iron Car Axles, $19 to $19.50; Horseshoes, $12 to $12.50; Cast Borings, $6.50; Steel Axle Turnings, $8.50; Iron Axle Turnings, $9; Machine Shop Turnings, $7.50 to $8.

Metals.—Lake Superior Copper is stronger, carload lots being now held at 18.75c. Western Copper is unchanged at 17¾c. Spelter is weaker at 5.90c. Pig Lead has advanced to 4.60c. under a better demand, while offerings continue light. The Colorado labor troubles have not yet been settled, thus keeping down production.

Tin Plate.—The demand is heavy. Manufacturers are pushing production, but are unable to keep up with orders, especially on Roofing Plates. Jobbers who thought they had enough stock to last through the year have lately been compelled to make large additional purchases. Their assortments are badly broken.

Jones & Laughlins, Limited, Lake and Canal streets, Chicago, have issued an announcement to the trade that they now have in operation a Plate mill, upon which they can roll Steel Plates, ¼ inch thick and heavier, up to 90 inches in width.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., August 1, 1899.

The market maintains its hardening tendency, and prices average higher than they were a week ago. Sellers are not trying to make new records, but in the attempt to evade business for a while quotations are given which are expected to cause a postponement, but in the majority of cases the order is placed, leaving the seller to wonder how he is going to fill it. There is no doubt that the scarcity of material is more severely felt to-day than it has been at any time during the year, and so far as can be seen there is no immediate prospect of relief. For several months past the theory has been put forward that every old wreck in the country would be put in active operation, and so far the theory has been about right; but all the same we seem to be no nearer than before to adequate supplies. Every day, of course, brings us nearer to that point, but it may be a long time before it is reached. Europe is in as bad, if not worse, condition than we are here, so that neither one is in a position to sell out on the other. The world is enlarging its requirements for Iron and Steel to a wonderful extent, and the increased demand must be very largely met by and from the United States of America. A careful consideration will show that the situation is entirely legitimate, and is in no sense due to speculation, or to attempts to inflate prices. The entire business situation is under the ordinary influences of supply and demand, and, while it is probable that nobody calculated on such conditions as now exist, it does not follow that they will be transitory because they were unforeseen. The best judgment of to-day may be as defective as it was a year ago, so that to predict either higher or lower prices as a certainty would be extremely reckless. It is evident, however, that for the present nothing unfavorable is in prospect, and until there is it is hardly worth while to say that prices are too high. So far as indicated by present conditions it seems as though prices will be higher before the end of the year, and the consensus of opinion is that no decided change need be looked for until well on into 1900 (if then), presuming that nothing out of the ordinary course of events occurs in the meanwhile.

Pig Iron.—A gradual tightening, both in price and demand, has been the feature of the past few days, particularly as regards the best grades of Iron. Consumers are rushed with work, and they cannot afford to take any chances on material, so that there is a gradual widening in quotations between the high grades and the low grades. As a natural consequence supplies of the latter are increasing, while the former are becoming scarcer. No. 2 X Foundry is now generally quoted at $20.50 as a minimum, and from that figure up to $21. The immediately available supply is down to the lowest point possible, some furnaces having nothing for delivery until

October and later. Prospects indicate a continuance of present conditions for an indefinite period, so that whether for spot or long delivery quotations are about equal. It is, of course, very difficult to predicate much in regard to the future, except that the demand promises to be larger than ever, and unless there is a marked increase in the supply prices will, no doubt, work in proportion. A distinctively larger supply of Pig Metal, however, would be very likely to check the advancing tendency, although it will take a long time to fill up vacant spaces, and the increased supply which is so much talked about may not materialize as soon or to the extent which has been predicted. It is a bad time for prophesying, any way, and one man's guess may be just as good as another's, without either one being very correct. Seaboard and nearby deliveries are quoted about as follows: No. 1 X Foundry, $20.50 to $21; No. 2 X Foundry, $20.25 to $21; No. 2 Plain, $19.25 to $19.50; Standard Mill Iron, $18 to $18.25; Basic (nominal), $21 to $21.50; Bessemer, $21 to $22; Low Phosphorus, $25 to $26.

Billets.—No business of any magnitude. Sellers quote $36 to $36.50 for limited quantities, but are not seeking business.

Muck Bars.—Sellers quote $35 to $36, f.o.b cars, but these prices fail to attract business, buyers talking $33 to $34 as more in accordance with their ideas.

Plates.—The demand is as active as ever, and full prices are readily obtained for such business as sellers see their way to accept. The Elmira Steel Company entered an order for a considerable tonnage of Universal Plates last week, which is of interest as showing that there is a new candidate for business both in Plates and Shapes, and that having no back orders they are in a position to give prompt deliveries. Eastern Pennsylvania mills are crowded with work, and have no difficulty in securing all the new business they want at full quoted rates, say for seaboard or nearby deliveries 2.70c. to 2.75c. for ¼-inch and thicker; Shell, 2.85c. to 2.90c.; Flange, 3c.; Fire Box, 3.10c. to 3.20c.

Structural Material.—The demand continues on a scale quite unprecedented considering the extraordinary amount of business placed during the past six or eight months. The mills are totally unable to deal with all the business that is placed before them, consequently they take what they can, and turn down the remainder. Some business has been entered at the full prices of to-day, deliveries to run all through 1900, while early deliveries frequently command a premium of several dollars per ton. Prices are nominally as follows, but there is no certainty that orders could be placed at the figures quoted, which are as follows: Beams and Channels, 2.15c. to 2.25c.; Angles, 2.15c. to 2.40c.; Tees, 2.20c. to 2.25c.; Deck Beams and Bulb Angles, 2.40c. to 2.50c.

Bars.—There is no difficulty in securing all the business that is wanted at the full prices of last week. New mills that have started up commence work on full time, and have already about as many orders as they care to accept. No concessions in prices are asked for, buyers being well satisfied to get material without dickering in regard to cost. Iron Bar prices steady, as last quoted—viz., for deliveries at seaboard or nearby points: Ordinary Bars, 1.90c. to 1.95c.; Refined Bars, 2c. to 2.10c.; Test Bars, 2.10c. to 2.20c.; Steel Bars, 2.20c. to 2.30c.

Sheets.—There is no abatement in the demand, and, although mills are running to their fullest capacity a great many orders are declined or postponed for further consideration. Prices very firm as follows for best Sheets (Common Sheets two-tenths less): No. 10, 3c. to 3.10c.; No. 14, 3.20c.; No. 16, 3.30c.; Nos. 18-20, 3.40c.; Nos. 21-24, 3.50c.; Nos. 26, 27, 3.60c.; No. 28, 3.70c. to 3.80c.

Old Material.—The market is pretty hard to gauge, as a number of new features are being developed. The consolidation of consuming interests is inimical to an open market, and attempts are already being made to reduce prices by lowering bids, or abstaining from bidding at all. Conditions favor holders, however, and business during the week has been at very full prices. Bids and offers about as follows, for deliveries in buyers' yards: Cast Borings, $11 to $11.25; Wrought Turnings, $12.50 to $12.75; Machinery Cast, $13.75 to $14.25; Old Car Wheels, $17 to $17.50; Heavy Steel Scrap, $15 to $16; Steel Rails, $17 to $17.50; Iron Rails, $21 to $22; No. 1 Railway Scrap, $19.50 to $21; Iron Axles, $23 to $25; Steel Axles, $17 to $17.50.

In order to pass the title to some mineral lands in Center County, Pa., that the Carnegie Steel Company, Limited, recently sold, the articles of co-partnership of that concern were filed at Bellefonte, Pa., on Saturday, July 29. This gave rise to the false report that articles for a new company had been filed.

St. Louis. *(By Telegraph.)*

Office of *The Iron Age*, 512 Commercial Building,
St. Louis, August 2, 1899.

Pig Iron.—Buying has been more quiet this week, but no indication of weakness has come to the surface in this market. Furnaces ready to take specifications are said to be few, and while the new stacks coming in will find a market without much scrambling, jobbers will doubtless give preference to tried brands on even deliveries. Ohio Softeners have sustained advances away ahead of Southern Foundry Irons. On July 28, 1899, No. 1 Silvery, 7 per cent. Silicon, was placed at $27.80 to a large buyer in territory adjacent to St. Louis. This iron cost them $12.50 in October, 1898, and in the five months to early March, 1899, the price had only increased to $14.50. The bulk of the present cost has therefore come through phenomenal advances during the five months just past. No change in prices is noted and we quote, f.o.b. cars St. Louis, as follows:

Southern No. 1 Foundry	$19.75 to $20.25
Southern No. 2 Foundry	19.00 to 19.25
Southern No. 3 Foundry	18.25 to 18.50
No. 1 Soft	19.75 to 20.25
No. 2 Soft	19.00 to 19.25
Gray Forge	17.00 to 17.25

Bar Iron.—An advance of $2 per ton has been made by the Iron mills and quotation in carloads to jobbers to-day is 2c., half extras, St. Louis. Cutting to length is an extra at 5c. per 100 lbs. No prompt delivery Iron is said to be had, and jobbers are rather anxious to have their old orders acted upon. Business has been very good, and buying by railroad, agricultural implement and machine builders has been of an excellent nature. Some jobbers at Missouri and also Mississippi River points are making sales at less than mill price with freight added, and it is questionable whether it causes any greater consumption. Local jobbers quote a base of 2.25c. to 2.35c., full extras, for stock in small quantities.

Rails and Track Supplies.—A reasonably fair business is being done on additional lots, but as railroads make up their specifications for the year's needs, trade at the present time is usually light. We quote Steel Splice Bars, 1.75c. to 1.85c.; Iron Splice Bars, 2.55c.; Track Bolts, with Square Nuts, 3c.; with Hexagon Nuts, 3.15c.; Spikes, 2.50c.; Steel Links and Pins, 2.55c. to 2.65c.

Pig Lead.—The market is placed at 4.55c. to 4.57½c. outside for Hard Lead, while refiners state they are holding out for 4.60c. The present St. Louis price with freight added to New York would tend to encourage the release of Mexican lead now in bond in American refineries, and to avoid this apparently New York is holding its market price in line with St. Louis and ignoring the freight. Lead Ore is unchanged at $27.50 per 1000 lbs.

Spelter.—It is not unreasonable to quote Spelter to-day at from 5.50c. to 5.60c. But little is doing, and nothing comes to light that would establish the price. Smelters for the most part have a fair amount of business ahead, but it would clear the atmosphere decidedly if miners and smelters would act in harmony. There seems no legitimate reason at any rate for Lead and Spelter prices to fluctuate to the degree they do. The scale price for Zinc Ore remained at $43 for 60 per cent. assay, but the top price advanced to $45 per ton for high grade.

Cincinnati. *(By Telegraph.)*

Office of *The Iron Age*, Fifth and Main streets,
Cincinnati, August 2, 1899.

In the sharpest contrast to July, 1898, the past month has closed with the record of scarcely a suspicion of midsummer dullness, and the total selling of Pig Iron, while not equal to last June or May, was nevertheless very satisfactory. August starts with a good average day's business, and the certainty of a demand far in excess of the supply. There have been few if any large sales during the past week, yet the total for delivery the first half of next year has been very fair. The shortage of Iron is more intensified, and the market to-day is stronger than it has been at any time throughout the present bull movement. Authorities here say that it will be folly to look for increased output from the South much before the third quarter of next year. Ohio furnaces are very much annoyed at present by their inability to get Coke. This trouble is chargeable directly to the scarcity of labor in the Coke districts. A prominent commission firm here reports an inquiry for a very large lot of Pig Iron for delivery in each month of next year. They have canvassed the market pretty thoroughly, and have failed to find a single furnace willing to name a price for delivery after next June. Foundry Irons are exceedingly scarce, and continue proportionately stronger than Mill Irons. No. 1 grades are especially scarce. No Silvery Irons can be quoted for delivery before next

October. The market is a little irregular as yet, but perhaps more uniform than it has been for months. Maximum prices herewith are nearer the actual market than the minimum. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$19.25	to $19.50
Southern Coke, No. 2	18.00	to 18.25
Southern Coke, No. 3	17.25	to 17.50
Southern Coke, No. 1 Soft	19.25	to 19.50
Southern Coke, No. 2 Soft	18.00	to 18.25
Southern Coke, Gray Forge	16.25	to 16.50
Southern Coke, Mottled	16.25	to 16.50
Ohio Silvery, No. 1	26.00	to 27.00
Ohio Silvery, No. 2	24.50	to 25.00
Lake Superior Coke, No. 1	20.00	to 20.50
Lake Superior Coke, No. 2	19.50	to 20.00
Car Wheel and Malleable Irons.		
Standard Southern Car Wheel	$19.00	to $20.25
Lake Superior Car Wheel and Malleable	21.50	to 22.50

Plates and Bars.—Market very strong and active. We quote, f.o.b. Cincinnati: Bars, at retail, 2.15c., with full extras; Bars, wholesale, 2c. with half extras, 2.15c. with full extras; Bar Angles, 2.35c. for ½-inch and larger; Sheets, No. 10, 2.85c.; No. 27, 3.35c.; Plates, 2.75c. to 2.85c.

Old Materials.— General conditions entirely satisfactory to sellers. Market is strong and active. We quote, f.o.b. Cincinnati: No. 1 Wrought Iron Railroad Scrap, $16 to $16.50; Cast Scrap, $11 to $12; Axles, $19 to $20; Iron Rails, $19 to $20; Car Wheels, $15 to $15.50.

Miller, Wagoner, Fieser & Co., Pig Iron and Coke merchants of Columbus, Ohio, have been appointed by the Marting Iron & Steel Company, Ironton, Ohio, exclusive sales agents for their different grades of Foundry Iron; brand, Nellie. Their annual output is 60,000 tons. They offer a limited amount of the different grades, Nos. 1, 2, 3, No. 2 Machinery and Gray Forge, for delivery in November and December, 1899, and first half of 1900.

Cleveland.

CLEVELAND, OHIO, August 1, 1899.

Iron Ore.—There seems now a stronger probability than ever that a transfer of the property of the Republic Iron Company will be made before the close of the present season. With a view to presenting the whole matter to the stockholders a committee, consisting of President W. D. Rees and Directors G. W. R. Matteson of Providence and W. F. Dummer of Chicago, will receive at the company's office at Cleveland until noon on August 21, stock from such of the stockholders as desire to sell, same to be accompanied in each instance by a power of attorney. If a majority of all shares are so deposited the committee is to negotiate for a sale at a price of not less than $30 per share. The strike of Ore unloaders, which virtually tied up operations at Ashtabula, Ohio, one of the principal unloading ports on Lake Erie, for more than a week, has been settled, but the necessity of the moment which compelled concession to the demands of the men, has, with other developments of the present season on the unloading docks, brought about a condition of affairs which can probably not be solved without some very vexatious and expensive delays at some future date. Rates for the lake transportation of Iron Ore are still firm at $1 from the head of Lake Superior, 90c. from Marquette and 75c. from Escanaba, but there can hardly be any doubt that the general situation has been strengthened by the payment of a rate of 3½c. on vessels that are to take wheat from Duluth to Buffalo during the latter part of the month of September. A number of vessels have been chartered at this figure and inasmuch as it is equivalent to $1.30 per ton on Ore, it affords an excellent criterion of the demand for vessels during the closing months of the season of navigation. The condition of more cargoes than ships, which has prevailed for some weeks past, still continues.

Pig Iron.—The situation in Pig Iron shows very little change over the preceding week. Almost all the buying, and it is quite lively, is for the first half of 1900, but there is no change in the situation which would enable any seller who had Iron of any grade to offer for immediate delivery or for delivery within two or three months to secure any price within reason. Almost the only transactions upon which the conditions affecting early delivery may be based are found in the sale of a few small lots of No. 2 Foundry at $21, Valley Furnace, delivery being promised within two months. For the six months from January to June, 1900, the prices are in the neighborhood of $19 for No. 2 and $20 for No. 1. Lake Superior Charcoal is still quoted nominally at $20.50 on Lake Erie dock, and the quotation for Gray Forge remains in the neighborhood of $17.50. The advance of 25c. per ton in the price of all grades of Southern Irons made during the past week brings the prices of these Irons up to just about the level of the Northern Irons, but there is no doubt that the Southern commodities are securing their share of the business. As the prices reach a more nearly equal basis, however, the percentage of Southern Irons used has, of course, decreased perceptibly.

Finished Material.—Time of delivery continues to be the sole question, seemingly, in all branches of the Finished Material market. In some cases there is noted a difference of just about $15 per ton between immediate delivery prices and those in which a later delivery is contemplated. In the heavier grades of Plate, for instance, the old quotation of 2.50c. still stands for delivery some months hence, but sales have been made during the past week for immediate delivery at 3.25c. An advance of 5 per cent. is noted in the price of Butt Weld Pipe. There has been considerable inquiry for Structural Material for building work and some for bridge work, but few orders have been placed while the same difficulty of securing delivery of material on contract still presents itself.

(By Telegraph.)

At a general meeting of the Lake Carriers' Association to-day, it was decided to grant an advance of about 40 per cent. in the wages of men on boats, to take effect August 15.

Ore unloaders made a demand that all Ore cargoes be trimmed at head of the lakes or they would refuse to unload at Lake Erie ports, and it was decided to make an allowance for the trimming of such boats as were declared unsatisfactory by an arbitration committee.

Birmingham.

BIRMINGHAM, ALA., July 31, 1899.

The week just passed has been a very firm one, and there has been no charge made of concessions in price. The conclusion is perfectly legitimate then that prices have been maintained. Just now the situation is stronger here than has been reported at any previous time, for whereas one interest adopted the policy a few months ago of carrying in their yards an emergency stock of several thousand tons to meet emergency demands, it has been encroached upon so ravenously that barely 500 tons of it now remain. And there is no way to replenish it. Probably that will be doled out to local requirement in homeopathic doses. As has been frequently stated, maturing contracts rush the furnaces for all their output, and there is practically no reserve to draw upon to meet any unexpected deficiency. That in warrant yards is steadily and gradually diminishing, and warrants, when they can be had, now command a price that discourages transactions. To-day 100 tons warrant Gray Forge had $13.25 asked. The expectation here is that the August report will show a greater decrease than the July report, and that there will result a Macedonian cry of "Iron—Iron—and never mind the price." Quotations, as given at Saturday's close, are Gray Forge, $13.50; No. 3 Foundry, $14.25; No. 2 Foundry, $15. The caution is added that these figures are inside. Some sales have been made at 25c. higher. The Softs are the price of Nos. 1 and 2 Foundry. No. 1 Foundry is $16. The demand from the domestic trade has been fine, and besides the usual run of medium and small orders has included orders from 2000 to 10,000 tons. The bulk of the transactions were for long delivery and from firms whose position for forecasting the market is such that the conclusion is natural that they anticipate no recession within the delivery for which they purchased. Spot and nearby deliveries are now practically out of the question. An occasional holder of a nearby delivery may conclude at times to unload on an anxious inquirer, but that will be only "a drop in the bucket." The export trade was in the market the past week, but more as an inquirer than a purchaser, as deliveries wanted could not be supplied. Still as evidence that they expect a resumption of the usual trade it is here stated that one British Iron firm have engaged room for 10,000 tons, shipments to commence in September, on the basis of $3.70 per ton to Liverpool.

Improvements contemplated by the Republic Iron & Steel Company are in a state of obeyance, for local reasons, which it is believed will soon be obviated. They include two new furnaces at Thomas, addition to the rolling mill Steel plant, and improvements (including new machinery) to both rolling mills.

The Birmingham Foundry & Machine Company are erecting a temporary structure in which to complete their contracts. Plans for a new building are about completed, and as soon as possible its erection will be commenced. They had some importatnt and particular work for the rod mill, a part well on the way toward completion, and some about ready for delivery, when the fire occurred. All of it was more or less damaged, and required a thorough overhauling, which is a factor in delay at the Rod mill. Affairs at Bessemer are rapidly improving. The

stock of the Bessemer Land & Improvement Company, which a short time ago was "droopy" at $5 per share, is now $26, and is pegged for $50 or more. Lots are increasing in value and investors are investing. Morris Adler and associates have purchased the water works. A new Cast Iron Pipe works with W. J. Nichols (formerly of the Howard-Harrison Company) at the head of it, backed by ample capital, will soon be an accomplished fact. The Alabama Soil Pipe Company will be enlarged. A new foundry company have been installed and a new machine shop secured. Bessemer is rising (metaphorically speaking) like a Phenix from its ashes. Its fortune seems to have been linked with that of H. F. De Bardeleben, and now that "McGregor is himself again," the feeling is strong that with his rising fortune he will bend all his energy to the building up of Bessemer, which he once made the Alpha and the Omega of his life. His success as a developer is freely admitted and this, together with the fact that he never chases the rainbows of fancy at the expense of facts attracts to his schemes the confidence and the money of the opulent and the savings of labor. If he lives to develop his scheme you will see Bessemer an important industrial point, and a strong factor in affairs of the district.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, August 2, 1899.

(By Telegraph.)

Pig Iron.—In the past week Bessemer Pig has sold at $20 and up to $21, Valley furnace. The scarcity of Bessemer metal is becoming serious and several Steel plants are running very close to shore on supplies, and two have been compelled to suspend operations for two or three days waiting for metal to accumulate. It is doubtful if a round lot of Pig could be bought to-day at less than $21, Valley, and there is every indication of still higher prices. The demand for Gray Forge is not so large as for Bessemer, but the market is strong at about $17.75, Pittsburgh. There is a famine in Foundry Iron, and carload lots of No. 2 have sold at $20, Pittsburgh. We quote Bessemer, $20.50 to $21; Gray Forge, $17, both at Valley furnace; No. 2 Foundry, $19.50 to $20; Gray Forge, $17.75; Bessemer, $21.25 to $21.75, all f.o.b. Pittsburgh. We note a sale of 10,000 tons of Bessemer at $20.10, Valley furnace; also 1000 tons at $21, Valley furnace, and 2000 tons at $20.50, Valley furnace. Sales are reported of round lots of Bessemer Pig aggregating probably 30,000 tons, at $21, Valley, equal to $21.75, Pittsburgh, deliveries running over into next year. It is claimed that there would be no difficulty whatever in selling Bessemer metal to-day at $21, Valley, if it could be had.

Steel.—There is a good inquiry for Steel and prices are strong on the basis of $34 to $35.50, Pittsburgh. A sale of 1000 tons of Slabs is reported at a price slightly less than $35, delivered at buyer's mill, Pittsburgh. Open Hearth Basic Billets have sold at $42.50 to $45, maker's mill, Pittsburgh. The latter price was paid for 1000 tons of Open Hearth Basic Plate Slabs.

Sheet Bars.—We note a sale of 1000 tons in long lengths at $35, delivered. We quote at $35 to $35.50, delivered, buyer's mill.

Muck Bars.—There is a very heavy demand for Muck Bars, and we note sales of 2000 tons at $34, Pittsburgh, for standard grades.

Spelter.— The market is about on a standstill. We quote prime grades at 5.95c. to 6c., Pittsburgh.

(By Mail.)

The shortage in Bessemer metal is growing serious, and in the past week two leading Steel plants have been compelled to suspend operations temporarily for want of metal. This is affecting prices, and this week Bessemer Pig has sold at $21, Valley, in round lots, deliveries in some cases running into next year. It is hard to tell where prices will stop, and predictions of $25 Bessemer inside of 60 days are being freely made. The tremendous consumption by the Steel plants seem larger than the furnaces can meet, and the only relief in sight is the starting up of the new stacks of the Lorain Steel Company and the National Steel Company at Youngstown. In the case of the Lorain Steel Company, one stack is already blowing, and the other will likely go in very shortly. It is not likely there will be much metal made at Youngstown this year. In the Pittsburgh district, Jones & Laughlins, Limited, expect to blow in their first new furnace about August 5. The capacity is 600 tons, but she will hardly get up to this amount for some little time. It is stated that agents from large Steel concerns are posted at different furnaces in the Valleys, watching shipments of metal and securing every ton for their own concerns they possibly can. In this condition, and it is not exaggerated, $25 metal does not seem to be out of reason. Mill and Foundry Irons are unchanged, but the market is strong on both. In Finished Material the situation is unchanged. There is a good steady demand, and prices just as firm at they have been at any time, and deliveries as hard to get. While it is true that new tonnage is not as large as it has been, yet it is sufficient, together with old contracts, to keep the mills filled up to the limit, making spot deliveries practicaly impossible to get.

Ferromanganese.— The local producer continues to make the nominal quotation of $85 for 80 per cent. domestic Ferro, but it is understood that foreign in small lots for prompt shipment has sold at much higher prices.

Structural Material.—Demand continues heavy, and the leading local mill is not promising deliveries inside of four or five months. There never was a time when the Structural mills were so crowded with tonnage as they are at present. The high prices do not seem to have interfered with demand to any extent. No large contracts are being placed but there is a heavy demand for small lots, which are bringing full prices. Grooved, Rolled Plates have been advanced to 2.35c. We quote: Beams and Channels, 15-inch and under, 2c.; 18, 20 and 24 inch, 2.10c.; Angles, 3-inch and up to 6 x 6 inch, 2c.; Angles under 3 inches, prices on which are not controlled by the Beam pool, are 2.15c. to 2.25c.; Tees, 3 inches and larger, 2c.; Tees under 3 inches, 2.20c. to 2.30c.; Zees, 3 inches and larger, 2c.; Bulb Angles and Deck Beams, 2.30c.; Grooved Rolled Plates, 2.35c., all f.o.b., Pittsburgh.

Plates.— The supply of Tank Plate has been materially increased by the starting of new mills, and while prices are not any lower, they are a trifle easier. The minimum of the market on Sheared, ¼-inch and heavier, is about 2.50c., but in exceptional cases a little better is done. There is a good deal of demand and the mills are filled up away ahead. We quote: Tank, ¼-inch and heavier, 2.50c. to 2.60c.; Shell, 2.60c. to 2.65c.; Flange, 2.70c. to 2.75c.; Marine, 2.80c. to 2.85c.; Medium Fire Box, 3c.; Best Fire Box, 3.25c. to 3.50c., f.o.b. at mill.

Merchant Steel.—Very large contracts are being placed by implement manufacturers, a good deal of this tonnage running over into next year. While prices on Agricultural Machinery are a good deal higher, yet with the abundant crops and good prices demand is expected to be fully as large, and the makers are therefore buying as much, or more, tonnage than last year. A continued heavy demand is noted for Tool Steel, on which prices are very firm. We quote: Toe Calk, 2.75c.; Open Hearth Tire, Machine Straightened, 2.75c.; Machinery Steel, Soft, 2.75c.; Hard, 3c.; Common Spring Steel, 3c.; Crucible Anaylsis, 3.50c.; Tire Steel, 2.50c. to 2.60c.; Plow Slabs, Bessemer, 2.75c.; Open Hearth, 3c.; Sleigh Shoe, 2.75c.; Cutter Shoes, Tempered and Bent, 3.75c.; Crow Bars, Pinch and Wedge Point, 3.50c.; Lay Steel, Rolled, 4c.; Hammered, 5c.; Tool Steel, 6.50c. up to 14c., according to grade. Terms, 60 days, less 2 per cent. cash in ten days.

Bars.—Prices of Iron Bars are now $3 to $4 a ton less than Steel Bars, and the result is that consumption is heavy, a good many former users of Steel having come back to Iron. Prompt deliveries are difficult to get, some of the mills rolling Iron Bars being filled up for the next two or three months. We quote Iron Bars at 1.85c. to 1.90c., half extras, Valley mill. Iron Bars of special grades, made from all Muck Bar stock, are being sold at 2.05c. to 2.15c. at mill. There is a heavy demand for Steel Bars, and several of the local mills seem very indifferent about entering tonnage, stating that they have all they can take care of in the next two or three months. We quote Steel Bars, random lengths, at 2c., and cut to lengths at 2.05c., at mill, half extras, terms net 30 days. For small lots of Steel Bars for prompt shipment, from 2.15c. to 2.25c. has been paid.

Sheets.— The mills rolling Black and Galvanized Sheets are filled up with old contracts, some of them being practically out of the market as sellers for balance of this year. There is a moderate demand for both Black and Galvanized, and for which full prices are being paid. Prices are strong, but no higher. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 3c.; No. 28, 3.05c. to 3.10c. In exceptional cases, and for desirable tonnage, we are advised that a few

sellers are slightly shading these prices. We quote Galvanized Sheets at 70 and 5, with 15c. freight allowance for carload lots or larger orders.

Rails.— Inquiries on the market are small. We quote nominally at $30 to $32 at mill for Heavy Sections. We are advised that a new agreement on Light Rails has gone into effect, and for 20 lbs. $44 and for 16 lbs. $45 is being quoted.

Skelp.— The market is strong and one or two leading mills advise us that they are sold up and not taking any more tonnage. Prices are very strong and we quote Grooved Iron and Steel Skelp at 2.25c. to 2.35c., and Sheared at 2.60c. to 2.75c. Prices depend largely on sizes and deliveries wanted.

Pipes and Tubes.— There is an inquiry in the market for 9 miles of 6-inch Line Pipe. There is a moderate demand for Merchant Pipe, buyers placing orders principally for immediate requirements only. The leading mills are filled up and are not promising deliveries inside of 60 to 90 days. Prices are very strong and for prompt deliveries of Pipe 50 and 10 at mill has been paid. We quote Butt and Lap Weld Merchant Pipe at 50, two 10's for less than carload lots, f.o.b. at mill, with an extra 5 per cent. for carload lots, delivered. We quote Screw and Socket Joint Casing at 40 per cent., and Inserted Joint at 35 per cent. off, with an extra 5 per cent. to dealers. There is an exceptionally heavy demand for small sizes of Boiler Tubes, and prices are very strong. Jobbers are often able to get considerably higher prices than are given below. We quote: 1¼ to 1½ inch Iron and Steel, 40 per cent. off list; 1¾ to 2½ inch, Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger, Iron, 55 per cent.; Steel, 57½ per cent., with an extra 5 per cent. to dealers. On carload lots freight is allowed, and on less that carload lots prices are f.o.b. maker's mill.

Connellsville Coke.—The H. C. Frick Coke Company shipped in July 33,075 cars of Furnace, Foundry and Crushed Coke, the largest business in any one month in the history of this concern. Last week, out of 18,696 ovens in the Connellsville region, 18,146 were active and only 550 idle, the production being 191,541 tons, the heaviest production in any one week in the history of the region. Prices on Coke are high, and we quote Standard Connellsville Furnace Coke at $2.25 to $2.50, and Foundry Coke at $2.30 to $2.50 to consumers, in tons of 2000 lbs. at oven.

New York.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, August 2, 1899.

Pig Iron.—There is a growing inquiry for Foundry Iron for delivery during the first half of next year, and some sales have been effected. Sellers generally ask present prices for such delivery. Current purchases for prompt delivery are small because there is very little Iron available. We quote as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, $20.50 to $21; No. 2 X, $20 to $20.50; No. 2 Soft, $19 to $19.25; No. 2 Plain, $19 to $19.25, and Gray Forge, $17.75 to $18.25. Southern brands are quoted: No. 1 Foundry, $20.25 to $20.50; No. 2 Foundry, $19.25 to $19.50; No. 1 Soft, $19.75 to $20.25; No. 2 Soft, $19 to $19.25; No. 3 Foundry, $18.50 to $18.75, and Gray Forge, $17.50 to $17.75.

Cast Iron Pipe.—Business is quite active for small amounts and the smaller sizes, but little is coming out in the way of large contracts. The most important in sight now is a large lot of 36 and 48 inch Pipe for Philadelphia.

Steel Rails.—We note a sale of a block of about 2500 tons for a Southern road, October delivery, at $30 at Eastern mill. There is a good deal of inquiry for export, but there is little prospect of putting through any business.

Track Fastenings.—We quote: Angle Bars, 1.80c. to 1.90c.; Spikes, 1.90c. to 2c., and Bolts and Nuts, 2.25c. to 2.30c.

Finished Iron and Steel.—The demand continues active and the present relatively high prices seem to have little direct effect in restricting consumption. Some work is being held back, but that is rather on account of the danger of delays in the deliveries than on account of high prices. Among the orders for buildings placed during the week are about 4500 tons in the aggregate for Thirteenth street and Broadway and Nineteenth street and Fourth avenue. The New York Central has called for bids on about 1000 tons of material for sheds and piers. There is also in the market a lot of eight bridges for Japan. We quote as follows: Beams, 2.15c. to 2.20c.; Angles, 2.15c. to 2.20c.; Universal Mill Plates, 2.50c. to 2.60c.; Tees, 2.20c. to 2.25c.; Channels, 2.15c. to 2.20c.; Steel Plates are 2.65c. to 2.70c. for Tank, 2.80c. to 2.85c. for Shell, 2.90c. to 3c. for Flange, 3c. to 3.10c. for Fire Box, 3.10c. to 3.15c. for Locomotive Fire Box, on dock. Refined Bars are 2c. to 2.05c. and Common Bars are 1.85c. to 1.90c. on dock. Soft Steel Bars, 2.10c. to 2.20c.; Steel Axles, 2c. to 2.10c.; Scrap Axles 1.90c. to 2c.; Links and Pins, 1.75c. to 1.80c.; Hoops, 2.42½c., base, delivered.

The Ætna Standard Iron & Steel Company of Bridgeport, Ohio, have opened a sales office jointly with the American Steel Hoop Company at 71 Broadway, room 703, Empire Building. A. Schroeder, who for many years has been their Eastern sales agent, will be in charge.

Metal Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, August 2, 1899.

Pig Tin.— The movement in this metal has continued throughout the last week in its upward trend, until it was checked by a material decline to-day. During the week our market advanced to 33c., but to-day declined sharply and closed at 31½c. bid, 32.25c. asked for spot. While certain parties, who, it is said, have quantities of the metal on a steamer just arrived, are willing to sell freely at 32c. The London market fluctuated throughout the week as follows: Thursday, £143; Friday, £143 12s. 6d.; Monday, £145 15s.; Tuesday, £144 17s. 6d., and to-day, £143 for spot and £144 5s. for three months' futures. Below we give the total statistics for Europe and the United States as compiled by the New York Metal Exchange, showing:

	Tons.
Total visible supply August 1, 1899	19,401
Against—	
Total visible supply July 1, 1899	18,758
Total visible supply August 1, 1898	24,739

Copper.— This market is unchanged and still firm. Lake Superior Ingot is quoted 18½c. Electrolytic Cakes, Wire Bars and Ingots have advanced a fraction and are now quoted 17½c. to 17¾c. Casting Copper has also gone up a shade and is now 17⅜c. to 17½c. It is said that the demand here from consumers is good. The London market has declined steadily and closed to-day £75 15s. for spot and £76 5s. for three months' futures. Best Selected has declined 15 shillings and is now quoted £80. The decline in London is attributed to the heavy increase in their visible supply, which increased 4000 tons for the month and is now up to 33,020 tons, a figure which they have not reached since December, 1897. This is really wonderful, considering the heavy decrease in the importations from America, which for the first seven months of this year amount to about 20,000 tons. According to the statistics compiled by the New York Metal Exchange the total exportation for the month of July, 1899, amounts to 6960 tons of 2240 lbs. The total exports since January 1, 1899, exclusive of Southern ports for July, amount to 58,683 tons, while for the same period in 1898 the total was 78,535 tons.

Pig Lead— Is quiet and unchanged. The American Smelting & Refining Company are still quoting 4.55c. to 4.57½c. for September and later delivery. Their spot prices for August have been advanced slightly, however, and are now given out as 4.60c. The prices for St. Louis are the same as those quoted in New York, while the prices for Philadelphia and Boston are still at a slight advance. The London market has not changed, and cables are still coming £14 10s. According to Metal Exchange returns the arrivals at this port for the month of July were about 3600 tons from Mexico, and 25 tons from Peru. The exports in bond from this port amounted to 4876 tons of 2240 pounds.

Spelter.— Although there are large inquiries afloat, the amount of business which is actually being transacted is exceedingly small, and owing to the very uncertain condition of the market business here is flat. Spot is quoted here at 6c., while shipments can be had at 5.75c. St. Louis is dull, with sellers at 5.60c. London is unchanged at £25 15s., and ores are quoted at $45, which is an advance of 50c. per ton. The conference between the smelters and miners which was commenced yesterday is evidently still in progress, as concerns here who will be informed of the result of the conference as soon as it is over have received no word as yet. It is intimated in certain circles here that a successful outcome of these negotiations is very doubtful. It is also said that the smelters are taking Colorado ores very freely. Information has reached us to-day to the effect that the strikers are still out at the Globe Works, and announcement is made by the officials of the A. S. & R. Company that they will allow the works at Denver and Pueblo to remain closed until the strikers give in.

Antimony.—There has been no change in price, although it is said that the demand is increasing. We quote Hallett's 9¾c. to 10c.; Cookson's, 11c.

Nickel.— There is no change in the tone of the market, and a strong demand continues. Prices for Cana-

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING AUGUST 2, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday	Wednesday
$47,100,000	Am. S. & W., Common	73,585	56 -56⅝	56⅝-57⅛	57⅛-58⅛	58 -59⅛	58¾-60¼	59¼-60¼
38,150,000	Am. S. & W., Pref. (7 % Cu.)	5,976	-96¼	96¼-96¾	-97	97 -97¼	97 -98	97⅝-98
9,250,000	Col. Fuel and Iron	13,065	-46	-45⅞	46 -46¾	46¼-47⅜	46¾-47¾	47⅛-48⅛
46,484,300	Federal Steel, Common	30,201	57¾-58	58 -58¾	-58⅝	58⅝-60⅛	59⅛-60¾	59⅝-60¼
53,253,500	Federal Steel, Pref. (6 % Non-Cu.)	7,264	79⅛-80⅝	-80¼	.....	79⅛-82⅛	81¾-82¼	82 -82¼
20,000,000	Tennessee Coal and Iron	40,670	69⅛-69¾	69¾-70¾	70 -70⅛	70 -72	71⅛-74	73¾-77¼
7,974,550	Cambria Iron, Phila*	512	-45¼	.....	.....	45⅛-45⅝	-45⅛	-45⅝
16,000,000	Cambria, Steel***	2,175	22⅝-23	-23⅛	-23	23 -23⅛	-23⅛	-23⅛
5,000,000	Penna. Common, Phila	721	-89	88 -89	-89⅛	89⅛-90	-90	.....
1,500,000	Penna. Pref., Phila	354	.....	.....	.....	-89⅛	-88	.....
28,000,000	Tin Plate Common, New York	18,390	37⅞-39	38 -38¾	38⅛-39⅛	40 -42	42⅛-44	42⅛-43
18,000,000	Tin Plate Pref., N. Y. (7 % Cu.)	1,500	.....	.....	.....	85⅛-88	87¾-88	-88
28,000,000	Tin Plate Com., Chic.	4,379	-38	38 -38⅛	38¾-39⅜	38¾-39⅝	39⅜-42	-43
18,000,000	Tin Plate Pref., Chic. (7 % Cu.)	2,205	85 -85½	-85¼	-86	85½-88	87⅛-88¼	.....
32,000,000	National Steel Common, Chic.	5,970	.....	51¾-52⅜	51¼-52	52 -54¼	50⅝-55	54 -54½
27,000,000	National Steel Pref., Chic. (7% Cu)	1,302	91¾-92	92¼-94	.....	93½-94	94 -94⅝	.....
32,000,000	National Steel, Common, N. Y.	13,615	50¼-50¾	50½-52	-52	52 -54¼	54¼-55½	53½-54½
27,000,000	Nat'l Steel, Pref., N. Y., (7 % Cu.)	8,863	91¾-92¾	92¼-93	93¼-93¾	93¾-94	94 -94¾	-94¾
7,500,000	Bethlehem Iron	150	.....	-63¼	.....	.....	-63	63 -63¾
.....	Bethlehem Steel Rights	4,329	23 -23¼	.....	-23	23 -23¼	-23⅝	-22½
12,500,000	Pressed Steel, Common	6,845	54⅜-55¼	55 -55½	54⅜-55¼	55½-58½	58¼-59⅞	57¾-58¼
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	4,192	87½-87⅞	87¾-88¾	-89	89 -89¼	89 -89¼	.....
19,000,000	Am. Steel Hoop, Common	13,580	31½-32	32 -32¼	-32	32½-35	34 -34½	34¼-35¼
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.)	4,690	-77⅛	77 -77¾	-77	77¾-79	78¼-78¾	78⅛-79
.....	Am. Car & Foundry, Common	14,025	16 -16¼	15¾-16	16 -16⅝	16¼-18	18 -18¾	17¾-18¼
.....	Am. Car & Foundry, Preferred	10,233	62⅝-62¾	62 -63	62¾-64	64 -66	66¼-68¼	66 -66⅞

* Par $50. ** Par $100 *** $1.50 per share paid in. Late Philadelphia and Chicago sales by telegraph

Bonded Indebtedness: Am. S. & W., $730,000; Am. Tin Plate, none; Am. Steel Hoop, none; Federal Steel Co., $13,200,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel: $1,000,000, Steelton 1st; $2,000,000 Sparrow's Point 1st, $4,000 000 consolidated, both plants; Bethlehem Iron, $1,351,000.

dian Nickel range from 36c. to 40c. for lots larger than 1000 lbs., and 40c. to 50c. for smaller lots.

Tin Plate.—Inquiry is unusually large and prices are without change. The American Tin Plate Company are still said to be quoting 4.55c. to 4.60c. for 100-pound Cokes, New York, for September and later delivery.

Spelter Production.—C. Kirchhoff, agent of the United States Geological Survey, reports the production of Spelter for the first half of 1899 as follows:

Production of Spelter by Semi-Annual Periods.

States.	First half 1898. Short tons.	Second half 1898. Short tons.	First half 1899. Short tons.
Eastern	2,945	3,981	4,620
Southern	1,695		
Illinois and Indiana	21,258	24,974	22,660 + 3,935
Kansas	21,464	18,668	25,972
Missouri	10,371	9,162	9,376
Totals	57,743	56,785	66,563

It will be observed that a very heavy increase in the production has taken place, particularly in Kansas. Reported stocks declined from 2392 tons on January 1, 1899, to 1705 tons on July 1, 1899, thus indicating a heavy consumption.

Iron and Industrial Stocks.

During the past few days there has been a decided increase in activity in iron stocks with a general advance. The most conspicuous has been the rise in Tennessee. A report is current that a plan is being considered to give two shares of common stock for one share of the $1,000,000 issue of preferred stock with its accumulated dividends.

The Moore group, including National Steel, Tin Plate and American Steel Hoop, have advanced quite materially, while American Wire and Federal Steel also show improvement. Unofficial reports of earnings for a number of these properties deal with large figures.

	Bid.	Asked.
International Silver, Common	14	17½
Otis Elevator, Common	34	35
Otis Elevator, Preferred	92	94
H. R. Worthington, Common	..	..
H. R. Worthington, Preferred	108	110
Cramp's Shipyard Stock	83	86
Pratt & Whitney, Common	3½	..
Pratt & Whitney, Preferred	38	48
E. W. Bliss, Common	138	..
E. W. Bliss, Preferred	125	..
U. S. Projectile	95	100
Barney & Smith Car, Common	21	25
Barney & Smith, Preferred	81	86
International Pump, Common	26	27½
International Pump, Preferred	70½	71
Republic Iron & Steel, Common	20¼	21
Republic Iron & Steel, Preferred	69¼	69¾
Diamond State Steel	7¼	..
Tidewater Steel	14	14½
Warwick Iron & Steel	12	12⅛

International Pump has had a sharp rise on the strength of a statement of earnings just issued. For the full fiscal year of the different constituent companies, the net profits have been: Henry R. Worthington, $566,-204.24; Blake & Knowles Steam Pump Company, $549,-294.70; Deane Steam Pump Company, Laidlaw-Dunn-Gordon Company, and Snow Steam Pump Company, $202,292.33, a total of $1,317,791.47.

Reports from Philadelphia are to the effect that the Bethlehem Steel Company will soon declare a dividend of 50 cents per share.

It is understood that the option on Thomas Iron Company stock expired on the 1st inst. and that the negotiations with the party in question have fallen through. The Thomas Iron Company have paid a dividend of 4 per cent. on the stock for the first six months of this year. The last of the outstanding bonds were paid off on July 1.

During the days of the industrial boom E. L. Harper of Fidelity Bank fame undertook to gather together a number of iron proprietors under the title of the Union Steel & Chain Company, whose preferred and common stocks have figured on the curb ever since. Absolutely no information whatever has thus far been vouchsafed the public as to the constituent companies, although in a general way the statement has been made that anywhere from 50 to 100 proprietors, including coal and ore mines, blast furnaces, steel plants and rolling mills were to be the basis of an issue of $20,000,000 of 7 per cent. non-cumulative preferred stock and a like amount of common stock. We have heard of several parties who have been invited to put their plants into this union, but we have yet to hear of a single one which has come into the fold. Until a full list of the constituent concerns is printed the iron trade will look upon this enterprise with reserve.

The annual statement of the Hartford Machine Screw Company, filed yesterday, shows the capital stock paid in to be $100,000, of which $85,000 is cash and $15,000 in property. Cash value of real estate, $164,172; personal estate, $676,680, of which $296,531 represents goods and merchandise. Debts are $4375; credits, $59,433.

A marked increase in the traffic of the New York State canals is shown for the first three months of the present season, as compared with 1898. According to statistics compiled by the State Superintendent of Public Works, 1,406,811 tons of merchandise were carried during the period from the opening of navigation to the end of the third week in July, as against 1,107,617 tons during the same period of 1898, an increase of nearly 300,000 tons. It is expected that the total tonnage carried during the present season will reach fully 4,000,000 tons. The most important increase this year is in shipments of iron ore, which were six times as great in amount as last year.

United States Minister Conger, at Peking, has informed the State Department that Nanking, China, was made an open port on May 1.

The colonies of Victoria and Tasmania, by means of the referendum, have returned overwhelming votes in favor of Australian federation.

Throwing High Explosives.

WASHINGTON, August 1, 1899.—The Board of Ordnance and Fortification has just made an interesting report on the progress of an important series of tests that have been made at the Sandy Hook proving grounds of certain methods of throwing high explosives and also of a specially designed Maxim-Nordenfelt quick firing mountain gun intended for campaign purposes in a rough country. The board has had remarkable success in the use of gelatine and thorite, which in Isham and Ames shells have been fired at long ranges with high power service rifles without detonating the charge. Following is the report of the board:

On arrival at the proving grounds the board proceeded to inspect the arrangements there made for conducting the test of the Isham method of throwing high explosives, and immediately afterward witnessed the firing of an Isham shell containing 133 pounds of explosive gelatine. The gun used was the type service 12-inch breech loading rifle and the charge was 415 pounds Dupont's brown hexagonal powder, w. z. The shell, weighing 1018 pounds loaded, was one of a lot of 12 made according to Mr. Isham's design under an allotment of the board. No fuse was employed, as it was desired to test the ability of the loaded shell not only to endure with safety the shock of discharge from the gun but also the shock of impact.

The result was most satisfactory. The shot first struck the water about 1500 yards from the gun and ricocheted three times, the final range being approximately 5000 yards. The gelatine was not detonated. A number of these shells had been fired previously under the supervision of the committee on high explosives, and there now remained but four of the 12 to be fired against armor plates to complete the approved programme of tests of the method.

The board next inspected and witnessed the firing test of the 75-mm. Maxim-Nordenfelt quick firing mountain gun, which, together with its carriage, four pack saddles, set of spare parts and tools and 400 rounds of fixed ammunition, had been purchased under an allotment made by the board November 17, 1898. Some 200 rounds had already been fired from the gun and three additional were fired in the presence of the board. In general construction, as well as in design, in the simplicity of the mechanism and in the ease and quickness with which it can be operated, dismounted and mounted, this gun is believed to be superior to any other of its kind now in service. The rapidity of aimed fire and the fact that the complete gun and carriage can be carried by four pack mules are of especial value in field use.

The board then inspected the fragments of certain shells in which the high explosive thorite had been used as a bursting charge, the experiment having been made by the commanding officer of the proving grounds at the request of the board as a portion of the trial tests which are being conducted with this new explosive. The first shell was a 7-inch Ames, cast steel, weighing empty 118 pounds, the bursting charge 3½ pounds of thorite with Pierce detonating fuse. The second was a 12-inch D. P. Carpenter shell, weight empty 950½ pounds, bursting charge 38 pounds thorite with Pierce fuse. The third was a 7-inch mortar shell, weight empty 113 pounds, bursting charge 6½ pounds thorite, Pierce fuse. The shells had been exploded electrically in the explosive chamber, and in all cases the fragmentation was satisfactory, the fragments of each varying in size from several pounds down to a few grains, and the number of fragments being very large. A fourth shell, a 7-inch Ames, was exploded with less satisfactory results.

The board then witnessed the firing of two service shells filled with thorite, but without fuse, from the service 8-inch breech loading gun. The first of these was an armor piercing shell fired with a comparatively low muzzle velocity against an armor plate 38 x 38 inches and 4½ inches thick, placed against timber backing and about 200 feet from the gun. The result was very satisfactory. The projectile struck the plate below and to the left of the center, entirely penetrating and breaking it. The thorite charge of 12 pounds was not detonated. The second shot with full service charges and pressure was then fired into the sea, striking the water first at a distance of about 4000 yards and ricocheting twice. The thorite bursting charge was not detonated. The results of the tests so far made with this explosive are considered to be very satisfactory, and the remaining tests, including its use as a bursting charge for field and siege projectiles, will, it is hoped, soon be completed.

The board then made further firing tests of the Sims-Dudley powder pneumatic guns of 5-inch and 2½-inch calibers, which had been purchased under allotments by the board and which have already been tested. Two projectiles loaded with explosive gelatine bursting charges were fired from each gun, one full caliber and one sub-caliber. The first shot, a 25-pound live shell, was fired from the 5-inch gun with 35 ounces of powder, Dupont special, struck in the sand at a range of about 2000 yards; the second, containing 10 pounds gelatine, was a sub-caliber projectile of a new design. It was fired with 40 ounces of powder and struck the sand about 3500 yards distant; the third was a full caliber live shell from the 2½-inch gun fired with 10 ounces of powder. The range was about 2500 yards. The fourth and last shot was a sub-caliber live shell fired from the 2½-inch gun with 10 ounces of powder. It fell about 3000 yards distant. The Merriam fuse, which is used in all these projectiles, has proven both safe and reliable in its operation.

The committee on high explosives then submitted a programme of the tests to which it is proposed to subject thorite in order to fully determine its service value. These tests include chemical analysis, safety of handling, storage effect, effect of moisture, heat and cold, powder and kind of detonator needed, fragmentation of shells in explosive chamber, sub-terra tests in comparison with other explosives, effects produced on water and on land by the bursting of shells of different calibers filled with the explosive, firing against armor with full service charges from service guns, and its use as a bursting charge in projectiles for field siege guns. The programme prepared by the committee was approved, and Captain Wheeler, the ordnance member, was requested to complete the tests of this explosive and of the Isham diaphragm shell at the earliest possible moment.

W. L. C.

The Sloss-Sheffield Iron and Steel Company.

A Steel Plant Proposed.

A company has been formed under the title of the Sloss-Sheffield Iron & Steel Company, to acquire the properties of the Sloss Iron & Steel Company of Birmingham, Ala., the Philadelphia Furnace, at Florence, Ala.; the Ensley Furnace, at Sheffield, Ala.; the Gulf Coal & Coke Company, the Corona Coal & Coke Company, and iron ore property at West Point, Tenn. We understand that subscriptions are being received on a liberal scale, some of the leading financial institutions participating. It was proposed at first to issue $10,000,000 of 7 per cent. cumulative preferred stock and a like amount of common stock, but this has since been scaled to $9,200,000 each of preferred and common stock. It is proposed to put aside $2,500,000 of preferred and $2,000,000 of common stock as a fund for the building of a steel plant and such other improvements as may be required. The issue of stock referred to is subject to a prior lien of $2,000,000 of 6 per cent. bonds, and $1,850,000 of 4½ per cent. bonds on the Sloss property. The Sloss Company have outstanding $5,000,000 of stock, and own four blast furnaces.

The fixed charge on the new company is $203,250 per annum for interest and when the whole of the preferred stock is issued $644,000 per annum for preferred dividends.

At a convention of Southern merchants held last week at Atlanta, Ga., the Southern Industrial League was permanently organized, with J. K. Orr of Atlanta as the first president, and a vice-president for each of the Southern States. The objects of the League will be "to encourage payment and collection of all debts; wipe from the statute books laws intended to hinder the collection of debt; protection of all forms of invested capital; to prevent the discounting of debts, and to further the completion of the Nicaragua Canal."

The month of July showed a decided ebb in the formation of industrial corporations. There were fewer such consolidations chartered than in any of the preceding months of the year. Nevertheless, the industrial enterprises incorporated represented the considerable total of nearly $170,000,000 of capitalization.

The assassination of President Heureaux of the Republic of San Domingo adds another name to the long list of chief magistrates of Latin-American republics who have come to their death by murder.

The new French battle ship "Suffren," of 12,500 tons, which will be the largest ship in the French navy, was launched on Tuesday at Brest.

A New York State Commerce Convention, under the auspices of the New York Board of Trade and Transportation, will be held in Utica, beginning Tuesday, September 26. All the principal cities and towns of the State will be represented by delegates.

The Central Pennsylvania Iron Trade.

HARRISBURG, Pa., August 1, 1899.—There has been published in certain papers in the city of New York a story about the American Switch Company and a probable combination of all switch manufacturers. It may be said on authority that the Pennsylvania Steel Company, who are the largest manufacturers of switches in the world, are not in this proposed combination and will not be.

The puddlers employed in the furnaces of this section will have a further increase of 25 cents next Monday. This will be the sixth increase since January 1, making the jump from $2.50 a ton to $4.

There was considerable interest here to-day in the strike of the puddlers employed by the Susquehanna Iron & Steel Company. It appears that their grievance was the matter of time for the increase in wages to become effective. They are governed by the Lebanon scale, and as the increase at Lebanon went into effect to day the puddlers of the Susquehanna Company thought the advance with them should not be delayed.

There will be 2500 tons of steel in the big lift bridge which the Pennsylvania Steel Company have contracted to erect for the Chicago Transfer Railway Company. The bridge will be 350 feet long and will cost $300,000. The same company will build a big railroad bridge for the Richmond, Petersburg & Caroline Railroad at Richmond. It will span the James River.

A. H. Boyer, for many years identified with the Central Iron & Steel Company, has accepted the position of chief clerk tendered him by John Q. Denny, general manager of the Susquehanna Iron & Steel Company. He will remove to Columbia.

The Seidel forge at Marysville, which has not been in blast for ten years, is fast being got in shape for immediate resumption.

The mill at West Fairview is only running one turn owing to the fact that puddlers cannot be secured for a double turn.

The shipment of the first lot of 43 cars of material for the bridge which will span the Gokteik Gorge on the Burmah railways in India was shipped from the Steelton plant of the Pennsylvania Steel Company to-day.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, August 2, 1899.

At various times during the last year we have published in this column notification of advances in the prices of machine tools as made by the large builders. During the first six months of the year prices were advanced and discounts shortened by almost every large builder of machine tools in this country. These increases in price were in most cases fully warranted by the heavy prices asked by the producers of materials. Most of the larger concerns were very cautious in raising prices, especially for the export markets. Despite the advances made the shops throughout the country were literally filled with work and orders were booked months in advance. One company who have been doing a very nice business for some time, it is said, have just announced their first advance. This company are the Cincinnati Milling Machine Company, and it is stated that the increase in price amounts to 5 per cent. It is also said that G. A. Gray has just added another 5 per cent. to planer prices, which brings the total advance of the year to 15 per cent. A large concern building shapers, gear cutters and drill presses near New York are just sending out notification of an advance of 5 per cent., which is the second advance made during the last few months. In fact, the indications are that another stiffening of prices is about taking place all along the line. The association prices for cold rolled shafting have just been advanced and the net discount now quoted is 25 per cent. off. The discount for pulleys has been lowered to 20 per cent.

J. W. Cregar has assumed charge of the New York office and warerooms of the Pratt & Whitney Company. The machinery agency which Mr. Cregar formerly conducted at the Philadelphia Bourse will be continued by the Cregar Sales Agency, of which L. E. Beaman, son of the senior member of Beaman & Smith, Providence, R. I., will have charge.

Adolphe Janssens of Paris and Brussels, who has been in this country several weeks, returned to France last Saturday. Besides having completed arrangements for the building of the Rice-Sergeant engines in France, Mr. Janssens purchased somewhat more than $100,000 worth of machine tools from various concerns here. The American Tool Works Company of Cincinnati are said to have received about $40,000 worth of this business. While here Mr. Janssens was almost constantly in touch with Alfred Brotherhood of Manning, Maxwell & Moore, and consequently most of his purchases were made through the latter concern. The machinery purchased was for the equipment of the new Franco-American Company's shops, which are now being erected at Lisle, France. The shops will be exclusively devoted to the manufacture of the Rice-Sergeant engines, the rights for which Mr. Janssens obtained from the Rice-Sergeant Engine Company of Providence, R. I. The machine shop, which will be 360 feet long and 120 feet wide, will be furnished with power from a 250 horse-power engine equipped with a rope drive. A 20-ton Shaw crane will traverse the length of the shop and several 5-ton jib cranes, also of the Shaw build, will be used in the bays. Mr. Janssen expects to return to this country shortly.

Activity in the construction of works for the building of automobiles is resulting beneficially to the machine tool trade. Two large deals are now in process of negotiation and another is said to be well on in the stages of projection. The Locomobile Company of America, with offices at 11 Broadway, are purchasing a considerable quantity of machine tools. A contract has just been closed with the American Tool Works Company for almost $50,000 worth of tools. Other large purchases are pending and specifications are being prepared for additional equipment. Mr. Barber of the Barber Asphalt Company, is the chief stockholder in this concern, and the offices of the Locomobile Company adjoin those of the Barber Asphalt Company. The machinery is to be installed in two plants which the company now operate in the vicinity of Boston.

The Riker Electric Motor Company, who are moving their plant from Brooklyn to Elizabethport, N. J., are also buying machine tools extensively for the equipment of the Elizabethport plant. Although considerable machinery has been purchased, the purchasing is not yet entirely completed. The offices of the company are still at York and Washington streets, Brooklyn. Mr. Proctor is engineering the purchasing. Negotiations are said to be well under way for the erection of a large and excellently equipped plant for the building of automobiles at Kingsland Point, near Tarrytown, N. Y., in which J. B. Walker of the *Cosmopolitan* is interested.

The Canda Mfg. Company of Carteret, N. J., are in the market purchasing machine tools for the equipment of an automobile plant.

It is stated in the trade that the Manhattan Railway Company awarded the contract for 32,000 nominal horsepower of boilers to Babcock & Wilcox last Friday. These boilers are to be installed in the new electric power plant which the company are about to erect at Seventy-fourth street and East River. The next contract to be awarded in connection with this plant is said to be for automatic stoking machines. There is a report to the effect that Roney stokers have been decided upon. At the offices of Westinghouse, Church, Kerr & Co. it was stated that they had not as yet received a written order for the stokers.

We are informed that specifications were sent to boiler manufacturers last week by the Edison Electric Illuminating Company, calling for bids on a 35,000 horsepower plant. This is for the proposed new plant to be erected on East River, between Thirty-eighth and Thirty-ninth streets, to which we referred last week.

E. W. Irwin, whose offices are located at 120 Liberty street, placed orders last week with the Spencer Automatic Machine Screw Company and the Whitney Mfg. Company for 20 automatic screw machines and universal hand milling machines.

A circular is being sent to the trade by the Buffalo Forge Company, whose New York offices are at 39-41 Cortlandt street, stating that "the statements and reports that the Buffalo Forge Company is owned and controlled by parties in Boston, Detroit and elsewhere, who have consolidated their interests, is incorrect. The Buffalo Forge Company is not interested in any combine, and is owned and controlled solely by William F. Wendt and Henry W. Wendt, doing business under the firm name of the Buffalo Forge Company, at Buffalo, Chicago, and New York City. Neither member of the concern owns or controls any stock in any other company manufacturing fan system heating, ventilating and drying apparatus, engines, blowers, &c."

Large numbers of the members of the Brotherhood of Boiler Makers and Iron Shipbuilders, employed in New York, Brooklyn, Hoboken, Jersey City, Elizabeth and Staten Island, went out on strike yesterday for a nine-hour schedule without a reduction in pay. Up to this writing 14 of the largest firms affected signed an agreement yielding to the demands of the strikers.

Jones & Laughlins, Limited, of the American Iron & Steel Works, South Side, Pittsburgh, are experimenting with a mechanical device designed to do the work of roughers and catchers. The success of the device has not yet been demonstrated.

The Chicago and Northwest Machinery Market.

Office of *The Iron Age*, 805 Fisher Building, CHICAGO, July 29, 1899.

The months of July and August are usually decidedly dull in the machinery trade. It has been the experience of almost every one connected with this business that trade slackens in June not to revive until some time in September and October. This year proves to be a notable exception. Business is holding up extremely well. The machine tool trade compares quite favorably with June, and indications at present are strongly in favor of continued good business during August. Some machinery dealers report a greater number of inquiries in hand than at any previous time in their history. The demand is of a general character, almost every machine shop apparently being obliged to add something to its equipment. It is remarkable that so large a volume of business should be reported, which includes so few complete outfits for new shops. A noteworthy feature of this trade is the appearance of orders for tools to be used in the manufacture of automobiles. Shops are turning to this new class of work, which may in a little time fill the void now caused by the light demand for bicycle factories. The bicycle makers have this year bought but few tools.

Builders of engines and other heavy machinery are actively employed, and are continually in receipt of fresh orders, keeping their productive capacity well covered far into the future. The demand for gasoline and gas engines is brisk, all manufacturers of such machinery having plenty of work. Gasoline engines are coming more and more in use in the operation of small factories, even in cities where it might be supposed other power could be secured quite cheaply.

Power transmission appliances are in sharp demand, makers of shafting having all the work they can turn out with the present scarcity of material. They are annoyed by inadequate deliveries, stating that they could handle much more business if they were able to secure better supplies. The high price of shafting, which is now selling as high as 25 per cent. discount from the list, seems to have no effect in checking the demand.

The makers of molding machinery are more crowded than ever, orders being received not only from all parts of this country, but from foreign countries. Labor saving devices are sought for in the foundry trade as well as in other branches of manufacture. The crowded condition of foundries in the vicinity of Chicago has been practically demonstrated the past week by a machinery builder who unsuccessfully scoured the city in the attempt to find a foundry in position to take an order for only 250 tons of castings to be turned out in a reasonable time.

Trade in all kinds of mill supplies, machinists' tools and miscellaneous articles connected with the machinery business has continued in large volume during the month.

The Marshall & Huschardt Machine Company, Chicago, report a very good July business. They now have more quotations out on machinery, considering values, than ever before. They find the demand coming from all sections, nearly all orders being for additions to existing plants. Only a few large equipments have recently been called for, among them being an outfit for a Montana shop, which, however, was secured by a New York house in competition with Chicago dealers. Manufacturers are now making somewhat better deliveries, but complain of scarcity of iron and difficulty in getting castings. The company now have the largest stock of machinery they ever had. Their stock is carried partly in a large room on the sixth floor of their building, which is rather an unusual place to store heavy machinery. The building, however, is very substantially constructed and adapted to this purpose. They are just shipping some machines to Holland and Russia.

J. B. Doan & Co., Chicago, report their July business not quite so heavy as in June, but much better than usually experienced in July. Their orders are of a scattered character, few of them calling for a large number of machines. The automobile business is now demanding a few tools, with prospects of a considerable increase. They find deliveries by manufacturers not improving.

McDowell, Stocker & Co., Chicago, report their business keeping up well. They did more in the past July than in the four previous Julys. Trade is surprisingly good for midsummer. They are now figuring on some fine outfits, and are selling much more new than second-hand machinery. Stocks of second-hand tools are now running low.

Manning, Maxwell & Moore, Chicago, report a much better demand than usual in July. They have now passed the point of making comparisons with recent years, and compare their business with 1891 and 1892, when trade was heavy. Business is now hardly up to the years mentioned, but is rapidly approaching it. Prices are still advancing. The manufacturers represented by this firm are far back in deliveries, and for this reason considerable business is lost which might otherwise be secured. The demand for wood working machinery, while of a limited character, is running considerably in excess of that of last year.

Hill, Clarke & Co., Chicago, report business brisk. Their inquiries are not confined to any particular line, but cover all kinds of customers and all sections. The manufacturers they represent are not only in arrears, but are now in some cases refusing to take stock orders at any price.

The Edward P. Allis Company, Milwaukee, Wis., received during July a greater volume of orders than ever before in the same length of time. Among the orders booked may be mentioned the following: Manhattan Elevated Railway, New York City, eight compound engines of 8000 horse-power each; five vertical compound blowing engines, each having two air cylinders 100 inches in diameter, for the new furnaces to be erected at Cape Breton, Nova Scotia; James River Construction Company of Richmond, Va., three steeple compound engines of 800 horse-power each; Pennsylvania Steel Company, Steelton, Pa., compound rolling mill engine of 1000 horse-power. At present it is not a question of what orders can be secured, but how much work can be turned out.

The Stover Novelty Works, Freeport, Ill., state that their July business was better than at any previous time. They were compelled to put in a 34 x 14 foot bed lathe and a 33 x 10 foot planer, to enable them to get out work more promptly. They have added to their line of products a 20-inch drill, which is now ready for the market. They have received very large contracts for special machines, among them being a 16 spindle 12-foot boring machine.

Chas. H. Besly & Co., 10 and 12 North Canal street, Chicago, report numerous shipments of their Helmet oil and Perfection and Bonanza oil cups throughout the agricultural districts, extending from Maine to California. In fact, they have never experienced so large a demand for this well-known lubricant as at the present time. Among foreign orders, Besly & Co. are just equipping a machine shop in India with lathes, drill presses, chucks, fine tools, &c.

The Stirling Company, Chicago, on July 1, 1899, had over 400 per cent. more contracts covering Stirling boilers in hand than on July 1, 1898, and over 1000 per cent. more than on July 1, 1897. The contracts covering Stirling boilers closed during the six months preceding July 1, 1899, were about three times as great as those closed during the corresponding period of 1898. Despite the fact that their shops have been enlarged and their capacity nearly trebled, they find themselves utterly unable to take all of the business offered them, and have been compelled in a very large number of cases to decline profitable contracts. In their marine department they have enough work in hand to keep them running full, night and day, for over a year on Government and other contracts. Prominent among the contracts in hand for marine boilers may be mentioned 54,000 horse-power for the Russian cruiser "Variag," the Russian battle ship "Retvizan," and the United States battle ship "Maine." Their only difficulty and only complaint is that their capacity, which, as already indicated, has been greatly increased, is still insufficient to enable them to handle all of the business which can be secured.

The Anderson Foundry & Machine Works, Anderson, Ind., find that trade in the machinery line is somewhat quiet at present, but they are especially busy on steam heating, and have about as much as they can take care of.

The Manistee Iron Works Company, Manistee, Mich., state that this is their quiet season, and they have not much more this year than usual at this time. They should have been very busy, but for the high prices of materials, which have stopped orders of perhaps $60,000 for which they expected to close contracts.

Perry Ransom, Oshkosh, Wis., says that trade during the month of July has not been quite as brisk as the previous months this year, and he has always found it so in previous years. He has plenty of orders on hand, however, to carry the works over until fall. He has been forced to make another advance of 5 per cent. on his machines during the month of July, which will hardly

cover the difference in cost of raw material, and unless there is a change will have to make another advance of 5 per cent. He had more work on hand for the month of July than ever before for the same month.

The Bates Machine Company, Joliet, Ill., say that while manufacturers realize that July and August are a little slack usually, this year is certainly an exception. Their business was never better than at present. Inquiries and orders are numerous. They are operating their plant night and day, and are unable to keep pace with orders.

The Cornell Machine Company, manufacturers of Cornell gas and gasoline engines, Chicago, find the market in excellent condition. Their works are running to their utmost capacity, and they find it difficult to fill their orders promptly. The demand seems to be particularly good for electric lighting, pumping and hoisting engines.

M. C. Bullock Mfg. Company, Chicago, report that business continues brisk, with no falling off for the current month. They are making shipments of machinery to Australia, New Zealand and South Africa, also to the Lake Superior district and Old Mexico.

The Chicago Pneumatic Tool Company, Chicago, have experienced no July dullness. On the contrary their trade is increasing, and is taxing their manufacturing facilities to the utmost. They have largely added to the facilities of their St. Louis works, and have recently taken control of the sales of the National Pneumatic Tool Company of Philadelphia, and state that they are to-day probably handling 95 per cent. of all the pneumatic tools used in the country. The merits of their tools seem to be appreciated the world over, and from all quarters come increasing orders.

The Nordberg Mfg. Company, Milwaukee, Wis., report that in the machinery line everything is still brisk. Among contracts they have recently booked are two compound condensing pumping engines to lift water against 1500 feet head for the Consolidated Tiger & Poorman Mining Company; two double cylinder hoisting engines, duplicates of five other hoists they have under way, all for the Michigan copper mines; and two 26 x 48 Corliss engines for the Milwaukee Harvester Company. Inquiries are still numerous, and prices that represent a reasonable profit above the increased cost of raw material can readily be obtained.

The Witte Iron Works Company, manufacturers of the Witte gas and gasoline engines, Kansas City, Mo., say that business has been exceptionally good for the month of July. They have quite a number of large orders booked, which will keep them extremely busy for some time to come. Every one seems to have the same complaint—namely, more work than they can handle, especially in the iron trade, and prices on material continue to soar upward. From present indications they believe business will continue good for at least several months to come.

The Walburn-Swenson Company, Chicago, observe no relaxation whatever in any of their lines, but there is a great demand, especially for vacuum evaporators. The advance in prices of raw material apparently does not interfer with a continuation of orders and contracts. They have nearly completed 300 of their round bale cotton presses for the American Cotton Company, which are being shipped to the cotton districts of the South.

The Charles F. Elmes Engineering Works, Chicago, say that their trade has been exceptionally good, and they now have contracts under way which will keep them very busy until December. They have contracted for 500 tons of material within the last week, to be used for immediate orders.

Rudolphi & Krummel, Chicago, say that the month of July has been a record breaker. Orders have come in covering almost every line of their various machines and tools. Among them is one for a complete outfit of presses, special machines and dies for making shipping cans for calcium carbide. These cans consist of an inner body, soldered and air tight and an outer steel jacket with wood top and bottom for protection. Each can contains 100 pounds. The capacity of the whole plant is to be 2000 cans per day. As packages of this description and for this purpose are new, a number of new machines are comprised in the order. They have also entered a number of orders for their straight sided heavy duty presses, for which they have adopted a system of reinforcing the cast iron frame with heavy steel tie rods to remove all danger of breakage.

The New Doty Mfg. Company, Janesville, Wis., report that although July is usually a dull month, it has been as good this year for them as any of the preceding months. They are continually working to the full capacity of their shop, and have no prospects of catching up with orders. The volume of inquiries continues good, and there is every prospect of trade holding up to its present condition for the balance of the year.

J. J. Ryan & Co., Chicago, say that the month of July has developed the unusual condition of being the busiest month thus far during the year. Ordinarily in midsummer they look for a falling off in trade, and have always taken advantage of the opportunity to make such repairs as might be necessary, put in such new machinery as might be decided upon, take account of stock, &c., which has always meant a shutting down of the works for a few days, but this year orders were so heavy and demands for quick delivery so imperative that they were not able to stop for even a half day, and the annual fishing trip was abandoned indefinitely. Orders in every department, but notably in the brass foundry and for babbitt metals, have been greater in number and for larger amounts than at any time previous. The trade furthermore is not confined to any one section. They have a large number of good sized orders from various points in the South and West for light and heavy brass and bronze castings, nickel babbitt, I X L babbitt, and particularly for phosphor bronze castings. Fortunately the recent enlargement of their foundry enables them to take care of their business promptly.

The Gates Iron Works, Chicago, have found July the most active July in their experience.

J. H. Kerrick, Minneapolis, Minn., says that the months of June and July have always been considered vacation months for the machinery trade, but this season they have been as busy as any time during the year. "The future for the next few years looks exceedingly bright, and the reasons for it are very plain. The stand our Government is taking with the commercial world places our production before the whole world. We are looked upon as the greatest nation on the earth. Our policy is broad and liberal, and it will only be a short time before the world will realize what the results will be from the stand our Government has taken toward the development of our foreign possessions. The scarcity of material in the iron market shows us what is being done in the building line in every direction. It also gives us an idea what is being done in the way of new inventions, calling for more material and skilled labor. Never before in the history of the country has the need of skilled labor been as great as it is to-day. The young man starting out in life must realize this if he does not want to be left in his pursuit for success in his chosen profession. There is more of the whole souled, liberal hearted, broad minded idea pervading the whole country than ever before. There is less of fault finding in each line of business. Harmony in lines of business, as well as home life, makes life pleasant and business a pleasure. We look forward in the future full of hope and not of despair. Minneapolis manufacturers stand well in the front in the line of goods made here. The machine shops all busy, some of them from one to two months behind their orders, such as the Twin City Iron Works Company, builders of Corliss engines, and the Diamond Iron Works Company, saw mill and flour mill machinery. Our saw mills never had such a harvest of orders and at such favorable prices. Our flour mills are each year increasing their output. We may look forward to an output of 100,000 barrels a day within the next five years, as well as we could five years ago to the present output of 60,000 a day."

The Vilter Mfg. Company, Milwaukee, Wis., say that they have found no let up to business. They are exceedingly busy on orders, having secured many lately for refrigerating and ice making plants, with numerous orders for large size Corliss engines and boilers, and are operating their works day and night continually.

Pawling & Harnischfeger, Milwaukee, Wis., say their trade continues to be very satisfactory indeed. Orders have come in at the usual rate. The only order of notable size the past month was one from the New York Shipbuilding Company for ten cranes ranging in capacity from 60 tons down, all of exceptionally long span.

The Franklin Machine Works, St. Paul, Minn., say that trade in the elevator line all through the summer has been very satisfactory. They have been having about all the work they could handle and are expecting an increasing trade for the fall. The signs for a continuance of prosperity are certainly very encouraging in their territory.

The Standard Pneumatic Tool Company, Chicago, report that the amount of business transacted during the month of July was about the same as for the preceding month, which excelled all previous records. There has been a noticeable increase in the number of orders received from foreign countries for the Little Giant pneumatic drills, boring machines and hammers, as also from the Eastern States.

According to a statement issued by the Massachusetts Bureau of Statistics of Labor a canvass of the cotton, woolen, boot and shoe, leather and paper industries of that State shows an increase this year of 4.06 per cent. in the number of persons employed, and a gain of 7.76 per cent. in weekly pay rolls over 1898.

A New Naval Construction Order.

WASHINGTON, August 1, 1899.—Within the past week the Secretary of the Navy has taken action of great importance, not only to the Department, but to shipbuilders and contractors throughout the country, who are interested in the construction of war ships. It is an open secret that for many months, in fact, for several years, there have been disagreements and jealousies between bureau chiefs growing out of the allotment to the Bureau of Construction of the responsibility for the designing, the structural strength, the stability and, practically, for the equipment of all war ships. This condition of affairs has necessarily subordinated the importance of the Bureau of Steam Engineering, the Bureau of Ordnance, the Bureau of Equipment and other bureaus of the Department, the chiefs of which are officers of experience and ability, and who have felt that they were entitld to a larger share in the work of perfecting designs and working out the plans thereunder.

Up to 1894 the responsibility for the various details in the construction of a war ship was divided among the various bureaus, but this plan was found to result in so much controversy and in the assembling of so many incongruous details that Secretary Herbert, soon after assuming office, issued a sweeping order in which he charged the Bureau of Construction and Repair with the "responsibility for the designs, structural strength and the stability of all ships built for the navy." The work of other bureaus was subordinated to that of Construction and Repair, and provision was made for the formal notification of the chief of that bureau by all other bureaus desiring to install innovations or modify original plans.

For five years Secretary Herbert's order has stood without revision or modification. Recently, however, there has been a strong concerted movement on the part of several bureau chiefs and their friends against what they have styled the "monopoly of the Bureau of Construction and Repair." This movement has manifested itself in a variety of ways, and directly and indirectly great pressure has been brought to bear upon the Secretary of the Navy to modify the Herbert order. It is probably no injustice to any one to say that out of this movement grew the report current for some days that the Secretary of the Navy contemplated the organization of a Board of Design, the president of which should be Admiral Dewey, and the functions of which should correspond to those of the Admiralty Board of the British Navy. In fact, the outlines suggested were not dissimilar to those of the so-called Naval Advisory Board which was organized under act of Congress by Secretary Chandler, but which was practically ignored by Secretary Whitney and promptly abolished when its statutory limitation ran out. There is the highest authority for stating that these suggestions concerning the Dewey Board of Design have come from the outside and not from the office of the Secretary or his assistants, and that up to the present time the project has not passed the stage of casual consideration. It is, of course, among the possibilities that the Secretary may avail himself of this method of composing the differences now existing between the bureaus, but it is the best opinion of the department that a special act of Congress will be required in order to make the poject effective.

In the meantime Secretary Long has yielded to the pressure brought to bear upon him and has eliminated from the duties of the Chief of the Bureau of Construction and Repair the designing of new vessels. This modification of existing regulations is most important, and is certain to have a far-reaching effect upon the future of the navy and upon all whose interests are associated therewith. The text of the Secretary's new order is as follows:

"In addition to its duties as prescribed by the Navy Regulations, the Bureau of Construction and Repair is charged with the responsibility for the structural strength and stability of all ships built for the navy.

"During the preparation of the design of a new vessell each bureau shall prepare a detailed statement of all objects under its cognizance which it is proposed to install during the construction and fitting out, complete for sea, of the vessel. Fully itemized estimates of weights and positions of centers of gravity of all objects will be included in this detailed statement. A copy of the above will be furnished the Bureau of Construction and Repair before the final plans are submitted to the Secretary of the Navy for his approval. Within three months after the commissioning of a new vessel a detailed statement, itemized as above, shall be furnished the Bureau of Construction and Repair, in which actual weights and revised estimates of positions of centers of gravity, where necessary, shall be given.

"Changes in ships from the original designs, in the positions, dimensions or weights of framing, hull plating, spaces, openings, or hull fittings, of machinery, armor and armament, articles of outfit or equipment, or in weight of stores to be carried, shall not be made unless approved by the department, nor shall work be commenced on a design till the space alotted for each purpose is shown on it. Provided that propositions to make any of the aforesaid changes not involvng a cost of more than $500 which may be agreed upon in writing by all the bureaus concerned need not be submitted to the department."

In this connection Secretary Long has been obliged to issue a special regulation intended to correct a state of affairs arising from the extended use of electricity on war ships. The friction existing between the bureaus has greatly complicated the installation of plants, and it is said that cases have been reported to the Secretary in which two separate departments at loggerheads with each other have been responsible for the working of a dynamo at one end of a wire and a fan at the other. The Secretary's new order makes an allotment to the respective bureaus of electrical apparatus as follows:

"To the Equipment Bureau, entire charge and cognizance of generators, lights, search lights, signals and such apparatus as may be necessary for communication, fans, fire and water alarms, bells, annunciators, steering and telephonic signals and electric conductors.

"The Construction Bureau will have entire charge of electric turret turning mechanism and ammunition hoists, except those in the turrets, conformably to the requirements of the Ordnance Bureau. It shall also have charge of the location of fans and blowers for hull ventilation, boat cranes, deck winches, capstans and engine telemotors and electric launches.

"The Ordnance Bureau will have charge of ammunition hoists and rammers and elevating gear in turrets, range finders, training and elevating gear for guns outside of turrets, air compressors, indicators and transmitters.

"The Equipment Bureau will locate the leads, but only after conference with the superintending constructor."

W. L. C.

The Randolph-Clowes Company.

A complete reorganization of Randolph & Clowes, Waterbury, Conn., reference to which was made in these columns a few months ago, has just been consummated. The new interest will be known as Randolph-Clowes Company, the capital stock of which is $900,000, $500,000 being 7 per cent. cumulative preferred and $400,000 common stock.

The final action in the completion of the company occurred July 31, there being some surprises in the constitution of the directory elected. The members of the board are well known Waterbury men.

A prominent manufacturer refers to the existing condition as follows: "There is no reason why the Randolph-Clowes Company, with their commodious, well equipped plant, will not take high rank both as a local industry, which is of the highest importance to the working community of Waterbury, and as a leading concern in the world's markets."

At a meeting of incorporators and stockholders held in Jersey City July 31 the following directors were elected: George H. Clowes, Chauncey P. Goss, Charles Miller and Conklin L. Curtiss, all of Waterbury; O. W. F. Randolph and Lyman Warren, New York, and Judge Edward C. Bates, Boston, the latter having acted as attorney representing the interests of George H. Clowes in the reorganization. At a subsequent meeting of the directors the same afternoon the following officers were chosen: Chauncey P. Goss, president; George H. Clowes, treasurer and general manager; and Curtis J. Birkenmayer, secretary. Mr. Goss will be recognized by the trade as treasurer and general manager of the Scovill Mfg. Company; Mr. Curtiss is cashier of the Citizens' National Bank, Waterbury, and Mr. Miller is one of the wealthy men of the Naugatuck Valley. Mr. Birkenmayer was auditor and office manager under Mr. Clowes of Randolph & Clowes for several years and formerly with Brown & Bros., the predecessors of Randolph & Clowes.

W. S. Barstow reports that the actual energy required by the electric auxiliaries at the Union station of the Brooklyn Edison Company, with a load of 2732 indicated horse-power on the main engine, is as follows:

	Electric horse-power.		Per cent.
Air pumps on surface condensers	11.6	or	.42
Circulating pumps on surface condensers	14.4	"	.53
Boiler feed-pumps	23.6	"	.87
Total of main auxiliaries	49.6		1.82

Reducing this to indicated horse-power at main engine, 66.8 indicated horse-power, or 2.45 per cent. of the total steam used in the station.

HARDWARE.

Condition of Trade.

AUGUST opens with a fair volume of business in progress and a promising outlook for the season. Travelers representing both manufacturers and jobbers are again soliciting orders and find comparatively little difficulty in securing them. The tone of the market is such as to encourage buying and all classes of trade are disposed more than for a long time to cover their wants amply, and in a good many cases to buy with something of a speculative spirit. The demand for goods, however, has been of late so active that it has taxed the capacity of manufacturers to their utmost and in certain lines has tended to prevent the accumulation of stocks in the hands of the jobbers. There has been, however, a good deal of unevenness in this regard. Of some goods the jobbers find it difficult to keep an adequate supply, but in others they are heavily stocked, having purchased freely and considerably in excess of their needs. In such cases the lower prices at which they bought promise to yield them a handsome profit. In other lines it is difficult for them to obtain goods with sufficient promptness to meet their requirements and a good deal of hurrying of orders is part of the routine of business. Manufacturers are endeavoring to meet the demands which are made upon them and factories are running to their full capacity. Difficulty in obtaining the raw material is the cause of much embarrassment and delay, while the increased cost of it necessitates revision of prices, resulting in the announcement of advances in one line or another from day to day. The fact that current prices to the retail merchants on most miscellaneous and staple goods are now made by the jobbers rather than by the manufacturers must be borne in mind by the trade, as the jobbers' prices very frequently are lower than the regular quotations of the manufacturers, and sometimes lower than the extreme prices at which they dispose of the goods to the largest buyers. With stocks of goods on which the advance has been from 50 to 100 per cent. this condition of things is naturally to be expected. The jobbers, however, are to a good extent following the manufacturers' advances and are thus reaping a rich harvest, which promises to make the present year a memorable one in the history of the Hardware jobbing trade. Manufacturers, too, who have been careful not to accept orders at low prices too freely, and especially to avoid contracting beyond their supply of raw material, are finding business more profitable than for a long time. There has not perhaps been with retailers generally as great an improvement in trade, and especially in the profit realized, but conditions are more favorable and the outlook is promising.

Chicago.

(By Telegraph.)

Shelf Hardware jobbers report the biggest July business in the history of the Hardware trade. The demand still keeps up remarkably. Retailers are buying more liberally as a rule than when prices were much lower. Those who are disposed to be conservative in their purchases are simply compelled to buy more frequently in order to keep up with the demand from their customers. Prices have advanced in quite a number of lines the past week. Jobbers find, in fact, that the changes are being made so frequently and so unexpectedly that it is not an unusual experience after they have sold a stock in some line at a good profit to find higher prices are asked by manufacturers than those at which they sold. Ice Cream Freezers have been marked up 10 per cent.; Tinware has also been marked up 10 per cent., while large lines of Builders' Hardware, such as Locks and other door and window trimmings, have advanced 20 per cent. Scarcity of goods is becoming more pronounced as the summer advances. Some manufacturers have already sold their full capacity for the balance of the year on such articles as Coal Hods. It is expected that Elbows will soon be in the same condition. The demand for fall trade promises to be unusually heavy. The agricultural outlook has seldom been better, bountiful crops being almost assured throughout the West.

St. Louis.

(By Telegraph.)

Now that July sales are being footed up reports confirm the heavy movement of business. The percentage of increase of sales over same month last year is reported as the greatest of any month of 1899. Prices seem well maintained, and this is said to be an encouraging feature of the trade. Jobbers do not look for any slump, but are actively at work strengthening their lines for fall. The balance of the year is expected to develop a trade in keeping with that just past, and all factors are arranging to handle business promptly. Visiting merchants are already seen, and from a progressive Texas dealer we hear to-day of unusually good prospects in that State. The recently flooded districts will recover trade in the usual characteristic American way. Changes have been made the past few days in Wringers. Table Cutlery has been placed 10 per cent. higher. Locks and all Builders' Hardware were moved up 20 per cent. July 28, and the new quotations seem to have been made by all manufacturers. Makers of hand agricultural implements have sent out new sheets effective August 1, and as factories have all they can do until September, it is unlikely that any new contracts will be considered until well into September. The stock of Common Sad Irons is not considered heavy, and the advance of 25 cents per 100 pounds will arouse an interest in the supply. Cross Cut Saws are sought for freely, and demand is said to be owing to the low prices, as an advance is looked for. Game Traps receive a good share of attention, and have sustained an advance of 5 per cent. Agricultural Implement Handles are named at an advance of 20 per cent., and, although of same material, Shovel and Spade Handles must carry 40 per cent. increase. Lawn Rakes are not excepted in the forward action, and figures carrying about 10 per cent. advance are made by nearly all factories. Sheet Steel No. 27 Black is quoted at $3.45 and Galvanized at from 70 to 70 and 5 per cent. out of stock. Mills seem more free as to shipments, and it is seen that mill operators keep in closer touch with one another. The Heavy Hardware trade is in fine shape, and, although the season is pretty well advanced, carriage and wagon materials are more in demand than expected. In this line also it is reported that July sales show an increase over any month for years past. Axles are now quoted at 60 per cent. off list and 1 cent per pound is added on

all Finished Axles from common to Concord. Local makers of Farm Wagons have all they can attend to and more than ever this indicates the prosperity enjoyed by the agricultural interests.

Boston.

BIGELOW & DOWSE COMPANY.—The volume of business is steadily increasing, and each month shows an improvement over the previous month both in increase of sales as well as in profits. The dealers are regulating their selling prices by the latest manufacturers' prices, and each advance is well maintained. The trade seem to appreciate the position and the fact that no matter what may be the cost of stock on hand the selling price should be based on the present market cost. When some few argue that prices are too high and express a fear that they cannot be maintained, the writer has an object lesson to show them in the way of a bill dated November 3, 1864. It reads as follows:

J. H. Curtis,

Bought of BUETER, SESE & CO.

25 lbs. Putnam Horse Nails, 8,	*.42*	*10.50*
2 doz. Underhill Axes, 3½ to 4½,	*20 00*	*40.00*
2 " White Oak Axe Handles,	*2.25*	*5.50*
10 casks Nails, 1/60 1/40 2/4 6/10,	*9 00*	*90.00*
1 " " 3d Common,	*10.00*	*10.00*
		$156.00

Everything indicates that the high cost of material must continue and that higher wages in force must make the advance on manufactures compulsory.

Good judges look for a higher range of prices for the fall business, and many have confidence that they will continue in 1900.

Labor in all branches of manufacture in New England is fully employed. The result of this prosperity must benefit all lines.

The present prospect for the balance of the year is very flattering.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—During the past two weeks the general volume of trade has moved along the well defined channels, with few changes of any kind, and none of importance, to distinguish it from weeks of recent date.

All kinds of seasonable merchandise are going into consumption with as much rapidity as could reasonably be expected.

The month of July has witnessed a very satisfactory midsummer trade, and decidedly in excess of the same month in previous years. The prospects for an immense yield of corn were never more favorable. Copious showers of rain have visited this entire section, and reports from the interior, almost without exception, are of the most encouraging character. The crop is now so far advanced that practically no danger from any source need be feared. The prospect of a good export trade at fair prices is an assurance that the business for the last half of the year will extend to extraordinary proportions.

Louisville.

W. B. BELKNAP & Co.—We report a steady market. There does not seem to be much new buying, or contracting for the coming year, but rather an effort to get old contracts and orders filled, which we believe would fairly supply wants for the rest of the current year. In some quarters where deliveries have been delayed there is more or less impatience, and that is apt to multiply itself into a number of inquiries, which greatly exaggerates in people's minds the volume of business.

However, there is unquestionably a large demand, as many new projects are on foot for the building of furnaces and other producing plants. While this process goes on, presumably for the next year or so, there will be plenty for all hands to do. Still every advance that is made brings us nearer the top, when the turning point will come. Just those of us who are smart enough to recognize it from afar off will come in for reputations later on.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—July has developed a demand for goods greater than we expected it would. Usually a month between hay and grass we do not expect much from it, but lately we have been behind in filling orders. The outlook for fall trade still continues favorable. Reports from the grain fields vary as they always do at this season. Sifting them, however, we are led to expect a fair return for the farmer's work. We wish the prospect for obtaining a satisfactory price was as good as the yield at this time promises to be. Stocks are fairly well assorted, not having been broken as badly as in some former years.

Advances in prices still come at close enough intervals to make them interesting and, where one has a full stock in the line affected, to make one think that life is still worth living. We hope that when prices strike the toboggan slide, which we know is on the other side of the hill, we will be as short of goods as we have been long on the rise.

Cleveland.

THE W. BINGHAM COMPANY.—July closes with a volume of business considerably in advance of that of last year, and, in fact, of any July on record. Miscellaneous advances continue to take place, and dealers are accepting them much more gracefully than at first. That higher prices have come to stay for the balance of this year and over the first half of next, at least, is scarcely to be questioned. To get the goods ordered is now a more serious question than the price to be paid. Many manufacturers are far behind on their orders, and require a constant drumming up to get even parts of orders filled.

Much contemplated work that was stopped when higher prices began to prevail has been ordered to proceed, and the outlook for the coming fall is excellent.

Local labor troubles are interfering somewhat with business in this city. Collections are not as good as they have been.

New Orleans.

A. BALDWIN & Co.—Notwithstanding the warm weather, business is fairly active, and during the past week has shown somewhat of an improvement.

The excessively high prices on some of the staples is affecting the sales to a considerable extent.

The crop conditions show a considerable improvement, which is being felt in all lines of business.

Notes on Prices.

Wire Nails.—The market continues firm without any change in prices. Demand keeps up well for the season, with encouraging indications for a brisk fall trade. Some difficulty is still experienced in getting prompt delivery for Wire Nails. Quotations are as follows, f.o.b. Pittsburgh, 30 days net:

To jobbers in carload lots	$2.50
To " in less than carload lots	2.52½
To retailers in carload lots	2.65
To " in less than carload lots	2.75

New York.—The distribution of Nails in the territory tributary to this market keeps up in fair proportion, restricted, however, to present requirements. Quotations are as follows:

To retailers, carloads on dock	$2.80
To " less than carloads on dock	$2.90 to 2.95
Small lots from store	2.95 to 3.00

Chicago, by Telegraph.—Manufacturers are enjoying a fair demand, which is running somewhat better than they had expected at this season. Jobbers also report a volume of business ahead of the usual midsummer average. Prices are continued at $2.80, Chicago, for single carload lots and $2.90 for small lots.

St. Louis, by Telegraph.—The time for trade speculation has been considered as past and purchases are made for nearby consumption. Many dealers have fair stocks

put by at the lower prices, and as these are drawn on new buyers will come to light. Single cars to retailers are quoted at $2.85, St. Louis, and smaller quantities at a minimum of $2.95, base, out of stock.

Pittsburgh.—There is a moderate volume of business and the tone of the Wire Nail market is very strong, with a probability of still higher prices. Wire Nails have closely followed Pig Iron and Billets, and with the higher prices on both of these another advance in Nails at an early date may be expected. We quote: To jobbers in carload lots, $2.50; to jobbers in less than carload lots, $2.52½; to retailers in carload lots, $2.65; to retailers in less than carload lots, $2.75, all f.o.b. Pittsburgh; terms 30 days net, to which freight to destination should be added.

Cut Nails.—The advance of 5 cents per keg in the price of Cut Nails announced last week is firmly held by manufacturers. The market has gained strength within the past two weeks, as is evinced by an absence of concessions in price to induce jobbers to purchase. Some jobbers are asking retailers 5 to 10 cents per keg more than the following prices, which are f.o.b. Pittsburgh.

To jobbers in carload lots	$2.15
To " in less than carload lots	2.20
To retailers in carload lots	2.20
To " in less than carload lots	2.35

New York.—Business continues moderate in volume. All jobbers are not charging customers the 5-cent advance noticed last week, thereby causing some irregularity in the market. The following quotations result: For carload lots on dock to the small trade, $2.25 to $2.30; small lots from store, $2.45 to $2.50.

Chicago, by Telegraph.—The usual trade is proceeding, with prices on small lots at $2.30.

St. Louis, by Telegraph.—Factories in this district keep their machines going energetically and are receiving their share of the rather limited business. Small lots continue at about $2.35, base.

Pittsburgh —There is a fair volume of business in Cut Nails and the tone of the market is strong. We quote: Carloads, $2.25; less than carloads, $2.35, f.o.b. maker's mill, Wheeling; terms 60 days less 2 per cent. cash ten days. For desirable orders some sellers are shading these prices.

Barb Wire.—There is almost nothing doing in Barb Wire for domestic trade. The following prices are, however, firmly maintained, f.o.b. Pittsburgh, net cash 30 days:

To jobbers in carload lots, Painted	$2.60
" " " Galvanized	3.10
" in less than carload lots, Painted	2.62½
" " " " " Galvanized	3.12½
To retailers in carload lots, Painted	2.75
" " " Galvanized	3.25
" in less than carload lots, Painted	2.85
" " " " " Galvanized	3.35

Chicago, by Telegraph.—Manufacturers and jobbers report the volume of business fair for the season, probably running a little better than had been expected. Prices are maintained at $2.65, Chicago, for single carload lots of Plain Annealed Wire, $2.90 for Painted Barb Wire and $3.40 for Galvanized Wire, with 10 cents per 100 pounds above these rates for small lots.

St. Louis, by Telegraph.—No heavy sales are noted, as the present demand is light and dealers covered themselves reasonably well before the advance. To retailers single car lots are quoted at $2.95 for Painted, with smaller quantities at $3.05. Galvanized is held at 50 cents advance.

Pittsburgh.—The volume of business is light owing to the lateness of the season and high prices. We quote $2.60 for Painted in carload lots to jobbers and $2.85 to the small trade in less than carload lots, with an advance of 50 cents for Galvanized, all f.o.b. Pittsburgh; terms net 30 days, to which freight to destination is added.

Smooth Wire.—The mills are not yet in position to fill orders for Smooth Wire as promptly as customers desire, though the present is an improvement upon the past in this regard. Former prices remain in force, quotations being as follows, f.o.b. Pittsburgh, 30 days net cash:

To jobbers in carload lots	$2.35
To " in less than carload lots	2.37½
To retailers in carload lots	2.50
To " in less than carload lots	2.60

Pittsburgh.—There is a good demand for Smooth Wire and the tone of the market is strong, with a probability of higher prices. As before noted, jobbers are making concessions in some cases. We quote: To jobbers in carload lots, $2.35; to jobbers in less than carload lots, $2.37½; to retailers in carload lots, $2.50; to retailers in less than carload lots, $2.60, all f.o.b. Pittsburgh; terms net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14 inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, $1.10.

Wire Picture Cord.—The trade will be pleased to learn that the leading manufacturers of Wire Picture Cord are endeavoring to act together in discontinuing the manufacture of special or irregular goods, intending that only standard goods shall be put up; that is, goods of full size and full length Picture Wire made of the same number of Wire and the same number of strands to each size. The market on this line is steadily strengthening, as the trade is appreciating the firmness with which the manufacturers' higher prices are maintained.

White Mountain Freezer Company.—Under date July 31 the White Mountain Freezer Company, Nashua, N. H., announce an advance of 10 per cent. on all Freezers of their own make, Tubs, Cans, and repair parts. These prices will only obtain on orders for immediate shipment and on such quantity as they are able to furnish during the months of August and September.

Tubular Lanterns.—F. Meyrose Lamp & Mfg. Company, St. Louis, Mo., are putting on the market a line of Tubular Lanterns and quote their Side Lift at $8.50 per dozen, subject to a discount of 50 and 10 and 5 per cent. The prices of the associated manufacturers remain unchanged.

Saginaw Mfg. Company.—Saginaw Mfg. Company, Saginaw, Mich., announce the following revised quotations on their Washboards:

	Per dozen.
Solid Zinc.	
Crescent, family size, bent frame	$3.00
Ivy Leaf, " " solid top	2.50
Red Star, laundry size, solid top	4.25
Double Surface Zinc.	
Cable Cross, family size, solid top	2.75
Saginaw Globe, family size, solid top	2.50
Wilson, family size, bent frame	2.50
Banner Globe, family size, solid top	2.35
Single Zinc Surface.	
Naiad, bent truss rods, perforated zinc	2.25
Bijou, " " " iron top	2.25
Saginaw Globe, family size, ventilated back	2.10
Wilson, family size, bent frame	2.10
Banner Globe, family size, ventilated back	2.00
Our Own Globe, " " " "	1.85
Pail Size.	
Langtry, zinc surface	1.40
Daisy, " "	1.20
Brass Surface.	
Brass King, open back, with bent truss rods	3.00
Nickel Surface.	
Nickel Plate No. 1001, open back, with bent truss rods	3.00

The company have also made an advance of about 20 per cent. in the price of their Gilbert Wood Split Pulleys. The higher prices announced on both of these lines are on account of the increased cost of material and labor.

Glass. — The American Glass Company have announced a general advance of 5 per cent. on Window Glass. An advance had not been unexpected when a shortage in popular sizes became pronounced. It is not improbable that advances on published prices will be asked by jobbers, as the scarcity covers a larger range of sizes. The following are the American Glass Company's prices:

Districts.	A.	B.	C.	E.
5000 boxes or more	85	85	.....	85
Carloads	80 & 15	80 & 15	80 & 20	80 & 15
3000 boxes or more	80 & 20	80 & 20	.....	80 & 2½
1000 boxes or more	.....	.....	85	.....

Demand in this section is limited and jobbers in consequence continue quoting former prices of 80 and 20 per cent. discount for small lots of Glass.

Dover Egg Beaters.—Under date August 1 Dover Stamping Company, Boston, have made the price of their New Dover Genuine Egg Beaters 75 cents per dozen and $8 per gross. The price of the New Dover Extra, family size, has been made $2 per dozen.

Paints and Colors.—*White Lead.*—Manufacturers of White Lead in Oil have been pursuing a conservative course in relation to prices. There have been quite large advances in the price of raw materials since any change has been made in the price of finished product. Buyers who keep informed as to the trend of the raw material market consider Lead products a good purchase. We continue to quote on a firm market as follows: In lots of less than 500 pounds, 6¼ cents; in lots of 500 pounds and over, 5½ to 5¾ cents.

Oils.—*Linseed Oil.*—The demand for Linseed Oil in large quantities is limited, owing largely to the uncertainty of the new Seed crop and the effect it will have upon the future price of Oil. The crop is now estimated as a 20,000,000-bushel one. This was about the estimate placed upon the crop of a year ago, which turned out to be but 14,000,000 bushels. The supposition is that the foreign demand may be large, as European countries are likely to be short on Seed. Customers are not being advised to purchase Oil for future requirements under present conditions. The demand for immediate consumption is fair. On July 27 Calcutta Oil was advanced to 58 cents per gallon. Otherwise prices are without change, as follows: Thirty-nine cents for City Raw in lots of five barrels or more and 40 cents in less than five barrels. Western Raw is quoted at 35 cents in carload lots and at 36 to 37 cents for small lots.

Spirits Turpentine.—The Turpentine market is a strong one and the month closed with advancing prices. A short crop and large demand, both domestic and foreign, point to still higher values. Purchases at present, at this point, are largely confined to covering present needs. Quotations are as follows: Southerns, 44½ cents per gallon, and machine made barrels, 45 cents per gallon.

Trade Organizations.

Wisconsin Retail Hardware Association.

As many of our readers are aware, the town of New Richmond, Wis., was visited a short time since by a destructive cyclone, which inflicted great loss and much suffering upon the inhabitants. For the benefit of the sufferers contributions were received from almost every city and town in the State, the responses to the appeal for aid being prompt and generous. Subsequently the Wisconsin Retail Hardware Association, through C. A. Peck, secretary, invited contributions from the trade for the benefit of two Hardware merchants of the town, whose stores and stocks were wiped out by the tornado. As a result of this appeal, Mr. Peck forwarded on the 26th ult. a number of due bills and receipted statements from jobbers and cash to the amount of $373, which were doubtless gratefully received by the victims of the storm.

While the association is not very active during the summer months, Mr. Peck refers to it as very far from dead, and as an evidence of this condition reports less than $60 outstanding dues, demonstrating pretty conclusively, he thinks, that the members are alive as to what the association is doing for them, even though it be in a quiet way.

Chicago Hardware Dealers' Outing.

The members of the Chicago Retail Hardware Dealers' Association closed their doors on the 26th ult., and enjoyed an outing with their families at Santa Fe Park, about 28 miles from Chicago, on the line of the Atchison, Topeka & Santa Fe Railroad. The attendance was little short of a thousand. A variety of amusements was provided, and young and old entered into the spirit of the day with much zest. A fine orchestra furnished inspiring music. The picnic committee, composed of Tony Englehardt, Fred. Ruhling, Theo. Krueger, J. F. Borchardt, A. E. Lott, Wm. B. Costello, Wm. Noebling, and D. McLaughlin, made very satisfactory arrangements for general entertainment. Among the visitors were Julian W. Perkins, assistant secretary of E. C. Atkins & Co., who distributed maps of Manila as souvenirs; Frederick C. Shays, representing the W. Dewees Wood Company, who distributed match boxes made of planished sheet iron; W. H. Bennett of the Reading Hardware Company, W. S. Cutler of the Ranney Refrigerator Company, C. W. Jones of the Fuller-Warren Company, S. W. Sexton of the Bonnet-Nance Stove Company; John J. Sinzich of Geo. H. Bishop & Co., T. C. Cunningham, Stove Repairs; W. B. Lyman of the Brand Stove Company, C. H. Garver of the Bryan Mfg. Company, Augustus Laemmar and C. A. Soper of C. Sidney Shepard & Co., Chas. G. Newell of Peninsular Stove Company, T. H. Kendall of Rathbone, Sard & Co., J. R. Shays of Wells & Nellegar Company, John F. Hanlon of Burdett, Smith & Co., John F. Cady of Chicago Stove Works, J. Whitlock of Detroit Stove Works, J. Corydon of Simmons Hardware Company. A formal programme was arranged for the afternoon, which began with a cake walk and included the following races and matches:

1. CHILDREN'S RUNNING RACE (From 6-12 Years).
PRIZE. DONATED BY
A pair of Scissors.....D. McLaughlin
2. GIRLS' RACE (From 12-16 Years).
A pair of Ball Bearing Roller Skates.....F. Ruhling
3. SINGLE LADIES' RACE.
A pair of Embroidery Shears.....J. F. Borchardt
4. MARRIED LADIES' RACE.
A Royal Wash Wringer.....The Am. Wringer Co.
5. BOYS' RACE (From 8-12 Years).
An Air Gun.....Wm. Noebling
6. BOYS' RACE (From 12-16 Years).
A Pocket Knife.....D. McLaughlin
7. FAT MEN'S RACE.
A Saw.....Geo. Bishop & Co.
8. LEAN MEN'S RACE.
An Oil Heater.....A. C. Barler
9. SALESMEN'S RACE.
A Grass Catcher.....Krause Mfg. Company
10. PRIZE BOWLING MATCH FOR MEN.
1*st*—*Oil Heater*.....Cleveland Foundry Company
2*d*—*One Saw*.....Geo. H. Bishop & Co.
11. PRIZE BOWLING MATCH FOR LADIES.
1*st*—*A Carving Set*.....The Lawton Cutlery Company
2*d*—*One Turkish Rug*.....S. Lyons
12. ONE-MILE BICYCLE RACE.
A Geo. H. Bishop Saw.....Geo. H. Bishop
13. TWO-MILE BICYCLE RACE.
An IXL Razor.....J. L. Smith
14. FAT LADIES' RACE.
1 Set of Silver Plated Knives and Forks...Tony Englehardt
15. TINNERS' RACE.
1 Set of 3 Books of the Am. Artisan Manuals..Daniel Stern
16. RUNNING RACE FOR RETAIL HARDWARE DEALERS ONLY.
One of L. S. C. Celebrated Rivalry Antique Carving Sets.....Landers, Frary & Clark
17. SECRET RACE.
1 Pair of J. Wiss & Son's No. 9 Snips....Anthony Freeman

A contest not down on the programme was a bowling match between the *American Artisan* and *The Iron Age*. The former was represented by Daniel Stern, proprietor, and Sidney P. Johnston, editor, while the latter was represented by Geo. W. Cope, associate editor, and John Laemmer, with the Orr & Lockett Hardware Company. The match was won by *The Iron Age*, the score being 246 to 200 in 10 frames.

Nothing occurred to mar the harmony of the proceedings in any way, and the unanimous judgment of all who attended was that occasions of this character did much to promote good feeling and establish close relations among those who ordinarily consider one another as competitors.

Changing the Selling Prices in a Retail Hardware Store.

In reply to the inquiry published in a recent issue for information in regard to good systems for making the selling prices of goods correspond with the cost of the goods we have received a number of communications from Hardware houses who are enterprising and systematic in their business methods. Some of these are given below and will supplement the advices contained in our last issue.

Importance of the Subject.

The following letter from a well-known house in Western New York touches upon the importance of advancing retail prices of goods in accordance with their increased cost. It points out also some of the difficulties experienced by many merchants:

It is a very difficult thing for retailers to do, as they are obliged to meet competition, and A may have a large stock of a certain article and refuse to take advantage of an advance, using it for a leader, and B may be obliged to buy same article at the advance, and if he has to sell at a loss he is obliged to meet competition, and B may be in shape to reverse matters on some other article.

Then there is the department store, that sells at a per cent. on cost and not on value, and if they can cut on their neighbors they are happy, and the only thing we can do is to adapt ourselves to circumstances and make our money on a falling market by keeping up prices as long as possible.

Price Book Corrected to Date.

In addition to the methods described in our last issue for making the selling prices of goods correspond with the changing cost of the goods, we give the following letter from an enterprising house in Indiana. We have no doubt it will be suggestive to those who are desirous of adopting approved methods:

Referring to the article for system of changing the prices in retail Hardware store, would state that the only system we have of making the selling prices of goods correspond with the cost of the goods, is to change the marks on our cards and packages and price-lists as the invoices come in, excepting that we keep a price book changed to date, the prices in it being changed as the markets change or as we are quoted by various manufacturers or their representatives, and our method of opening and keeping this book is as follows:

When we take our annual inventory we enter the articles, writing each name in full, figuring the same list and discount. The book is then indexed and there is a margin of two inches to the left of each page, for names of persons from whom we buy the articles or from whom we receive quotations, also for the quotation.

The inventory is written in ink, but the names of manufacturers and persons from whom we buy goods and their quotations are written in lead pencil. These we can change from time to time.

This not only helps to keep the price book up to date, but keeps before us, in alphabetical order, a list of articles and names of the persons from whom we buy them. We have used this system now for three years, and like it very much.

From a Western Merchant.

In the following letter a prominent house in Indiana briefly describe the method used:

We watch these changes and change prices daily as they occur.

Many goods in our store are listed on cards hung close to the stock, and in these lines the changes made are very simple.

This is not practicable in all lines, and where we mark prices on boxes and on articles, we simply have it to do, and do it.

I cannot think of any other way, but shall certainly be interested in reading the suggestions of others.

We, of course, keep a cost book, in addition to the above, and we keep this posted up to date constantly.

I use *The Iron Age* Hardware Price Book F.

A Special Clerk.

A prominent Connecticut house who have a clerk specially charged with noting changes with care and making them known in the store, thus describe their plan:

We would suggest that it be the duty of one clerk to check the prices on all invoices that are received and to watch all quotations that come in. He should see that every change is put on the price-lists, and if the advance or decline is great enough, the selling price should be changed.

If the goods themselves are marked the new price should be given to the clerk having the care of that stock.

This is the system we have been using for a number of years, and it works well.

Cost Book.

From a house in New York State we have the following description of their method:

On all of our principal lines of goods, such as we are obliged to follow closely in the changes of the market, we have the cost and selling price both in a cost book and upon cards. The cost and selling prices of these lines are changed with each advice of a change in the market.

When we come to the many small articles which are always kept in a Hardware stock, such as we carry, and pay from 200 to 300 per cent., and in many instances more than this, when sold in lots of less than a dozen, we very seldom change our retail prices for the goods on hand, and seldom at any time, unless it may be some few articles that have had a phenomenal advance.

Bulletin Board.

From a New England Hardware house, who have excellent business methods, we have the following advices:

Our system of marking goods is such that the many changes of prices are being fairly well followed in our store. We have one man whose duty it is to see that all goods are properly marked when the invoice is checked, and to his vigilance we add the oversight at the office of the buyer, who also checks up invoices as regards prices.

We have in our store for the benefit of all our clerks a bulletin board on which notice is suspended, calling attention to all changes in prices, to new rules, and to other matters of interest as they occur from time to time. These notices we request our clerks to sign as evidence that they have seen and noted the changes.

In addition to the bulletin board we usually call our clerks together, just before the close of business each day, for a few minutes' conference on matters of interest to us all. And we find that this daily conference works decidedly to the mutual advantage of both clerks and proprietors.

APPRECIATING the necessity of an office clock in every well regulated establishment where "no tick" is the rule and time is not a secondary consideration but of the greatest importance, the Parry Mfg. Company, Indianapolis, Ind., are sending out gratis to their customers a large and handsome office clock measuring 17 x 27 inches, with a face diameter of 12 inches. Surrounding the outer edge of the face are 1-inch letters forming the inscription, Parry Buggies, and in the center of the dial the lettering Parry Mfg. Company, Indianapolis, Ind., while the glass front inclosing the pendulum of the clock is decorated with a large illustration in gold. The casing of the clock is composed of quartered oak in natural wood finish, and is of ornamental design.

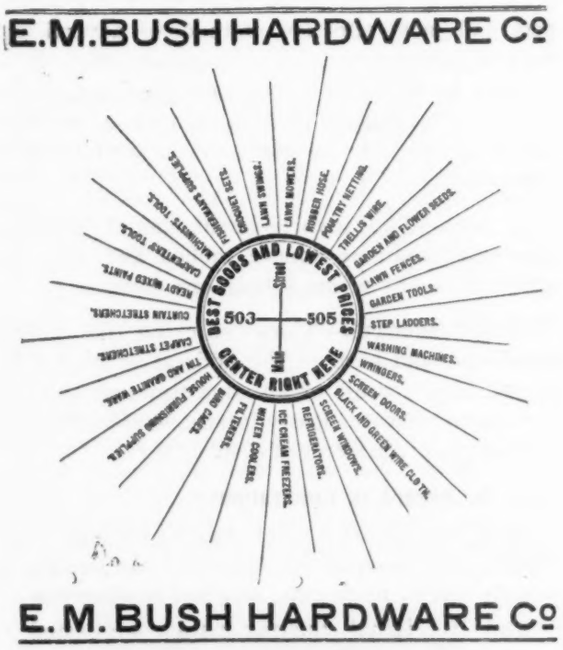
Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

THE E. M. BUSH HARDWARE COMPANY'S ADVERTISEMENT AGAIN.

The advertisement of the E. M. Bush Hardware Company, Evansville, Ind., a reduced *fac-simile* of which we gave in our issue of May 11, has called out several criticisms, to some only of which we have already referred. The advertisement in question was so unique in its arrangement that it is not surprising that it is differently regarded by merchants who give a good deal of attention to advertising methods. There is undoubtedly advantage in the expression of views in regard to advertising methods, and the criticisms, favorable or otherwise, of this advertisement contain suggestions which are deserving of consideration. In order that our readers may appreciate the criticisms given below we reproduce herewith the advertisement in question, reminding our readers that it is given in materially reduced size, the original advertisement being 9 x 10 inches:



A Favorable Opinion.

From a gentleman who has given a good deal of attention to advertising matters we have the following criticism:

It is remarkable how individuals not in antagonism will differ on the same subject. This fact is well illustrated by criticisms by enterprising merchants in your issue of June 29 of the E. M. Bush Hardware Company's advertisement. Our experience teaches us that if a man who uses the term, "best goods at lowest prices," brings the same into practice it is a business builder. However, if he neglects to do so it is, on the contrary, a business shatterer. To make the location of one's place of business and the firm name a prominent feature in an advertisement is in my estimation a splendid fault, and as regards the Bush advertisement I consider it extremely good for a change. Its originality helps to make it so. It represents a type of "up to date," "out of the rut," progressive Hardware merchant with whom people like to trade. It points out the Bush store as the hub, the central point, for all Hardware traders who seek the "best goods at the lowest prices," and I believe was sufficiently observed by every reader to impress upon the mind the fact that it was the advertisement of the enterprising E. M. Bush Hardware Company.

An Adverse Criticism.

From a successful Hardware merchant who has also given a good deal of attention to advertising we have the following comments:

I should not count the E. M. Bush Hardware Company's advertisement of value. It lacks the substance of good advertising—that is, terseness, simplicity, strength and ease of reading. It is geometric, which is generally bad, and lacks convincing qualities. I cannot see where results would be forthcoming. In fact, it is one of those advertisements that leave you blind as to their intent or contents.

Regarded with Favor.

The following expression of opinion takes issue, it will be observed, with some of the criticisms which have been expressed and defends the advertisement as one likely to accomplish its purpose:

I have read with some interest and not a little amusement some of the criticisms made by your correspondents on the Bush Hardware Company's advertisement. With all the attention which is given to advertising matters, and so many cranks writing on the subject, it seems to me that a great many theories are propounded and extreme views expressed. There is, of course, a good deal of force in the principle laid down so positively by advertising sharps that an advertisement gains in efficiency by relating to only one or two lines. This principle, however, must not be allowed to exclude all other classes of advertisements. Anybody, for instance, that looks over the announcements of dry goods or department stores will find large advertisements relating to a great variety of goods, on nearly all of which they give prices. The special merit of the Bush advertisement, in my judgment, is that it is of so striking a typographical arrangement that it is rendered the most conspicuous advertisement on the page in which it appeared. It is safe to say that everybody that looked over the paper saw this advertisement. The fact that it is not easy to read the different lines of goods which constitute as it were the spokes of the wheel is more in favor of the advertisement than against it. I think you will find that a great many people took pains to read these different lines, even though, and perhaps because, it was necessary to turn the paper more or less in doing so. I notice that a good many people take satisfaction in advertisements or other matters which have just a little of the puzzle element in them. The manner in which the advertisement emphasizes the location and name of the company is also in its favor.

In my judgment the advertisement is a good one, but I assume that the company have sense enough to use such an advertisement only occasionally and not regularly. From the originality shown in this one I should suppose that some of their other advertisements would be suggestive.

The E. M. Bush Hardware Company's Reply.

In view of the diversity of opinion expressed in regard to this advertisement we invited the E. M. Bush Hardware Company to make such reply as under the circumstances they deemed advisable, and take pleasure in submitting the following letter:

We certainly have no objection to a discussion as to the merit of our ad., deeming such a discussion advantageous to us and perhaps to others. We should have replied to criticisms in issue of May 18, but were too busy, partially as a result of this very advertisement and others of a different character which preceded and followed it.

The first criticism, "It is quick to catch the eye but I believe that few people will stop to study it out," was conclusively proven wrong by many such remarks as these: "My daughter caught sight of that razzle-dazzle ad. of yours this morning; everything stopped until she had read all around that circle, nearly cracking her neck to do so."

"Mr. Bush, were you playing on woman's curiosity when you invented that ad.? I couldn't put it down until I read it all around."

Our telephone bell rang lustily that morning. "Why, Mr. Bush, I didn't know you handled Refrigerators [one of the new lines we had added] till I read around your wheel this morning."

"Mr. Bush, the spokes of that wheel caught my eye this morning and reminded me that I need garden hose," &c.

Your correspondent, continuing, thinks "the ad. would have been more easily read had the articles enumerated on left of a vertical line been reversed and made to read as though on the right."

We wrote it in this way first, but found it not as effective, really preferring our way because, as our critic says, "the reader had to stand upon his head or turn the paper around."

We believe the uniqueness and difficulty in reading made the more lasting impression. Our critic must remember that the advertisement in original size was much more effective and legible than as reprinted.

We agree that "good sensible talk, plainly set up," is a proper way to advertise, but we also believe in a change of diet.

Our object in advertising is to extend our business, but we believe there are several ways of doing that, and that variety must be secured to attract and hold attention.

Our advertising this spring has been on a larger scale than usual, with its principal object to fix in the minds of the public our change of location and new style of firm. But we have used various ways of doing it, cuts sometimes (though we find it very difficult to secure small cuts that are distinct. Many of the cuts sent on request prove that the firms sending them believe that "any old thing will do," no matter what size or quality), sometimes "good plain talk," prices, &c.

We believe that that which best keeps a firm in the public mind sells most goods, and it has been our experience that advertising any certain article does not do this as effectually as by keeping your general business well in the mind of the public.

In reply to criticism of June 29, if the writer assumes that all our ads. are of this character, simply mentioning an article without calling attention to merit and price, his criticism is well made, but that we have answered.

We will probably never use just that form of an ad. again. It has served its purpose in bringing prominently before the public our new location, change in name of firm and some new lines which we had added. So for us it was a *good* ad.

EVENSON BROTHERS' METHODS.

We have received from Evenson Brothers, St. Peter, Minn., copy of an advertisement in which they give a cut or cartoon drawn, we believe, by G. M. Evenson, and made by the inexpensive process which they use, to which we have already alluded. In regard to the method which they pursue in this kind of advertising they say:

We inclose a copy of a recent ad. of ours, showing the manner in which we cartoon local events and use the cartoon to attract attention to our advertisements.

The city fathers have been considering the advisability of establishing a curfew ordinance and the other evening the youth of the city held an indignation meeting.

The following day we made the inclosed cartoon of the "Meeting of de Gang," and the ad. made a great hit. Since then we have illustrated our ads. by cartooning some local event. The result is that as soon as the readers get their paper they look first to see what Evenson Bros.' cartoon is.

The Iron Age Advertising Prize Competition No. 2.

COMPETITION NO. 1.—The advertisements submitted in accordance with the terms of Competition No. 1 are now in the hands of the Committee of Award, whose decisions will be announced as soon as possible.

We hereby announce Advertising Prize Competition No. 2 for the best advertisement relating to any kind of FALL OR WINTER GOODS.

1. **Object.**—The object of the Competition is to draw out the views of the trade in regard to the best and most effective methods of advertising the goods in question. The general participation of those interested in the Retail Hardware Merchant's advertising is invited, such use as we may deem advisable to be made of the competitions submitted.

2. **Size.**—The advertisement should not contain more than 25 square inches and may be arranged in one or more than one column.

3. **Arrangement.**—Those entering the Competition should send to the address given below the design or draft of an advertisement in such form as to indicate clearly its size, subject matter, kind of type, character of display, &c.

4. **In Regard to Illustrations:**

(a.) The advertisement may be without illustration, or it may, at the option of the designer, contain one or more cuts, original or otherwise.

(b.) If original illustrations are suggested, a rough sketch, which will be sufficient to give our artist the idea of the illustration, will be acceptable.

5. **Date.**—This Competition, which is open to any in the trade, will close Saturday, August 26, 1899.

6. **Prizes.**—The following Prizes will be awarded:

FIRST PRIZE, $25.

SECOND PRIZE, $15.

THIRD PRIZE, $10.

All communications are to be addressed to

THE IRON AGE,

232-238 William Street,

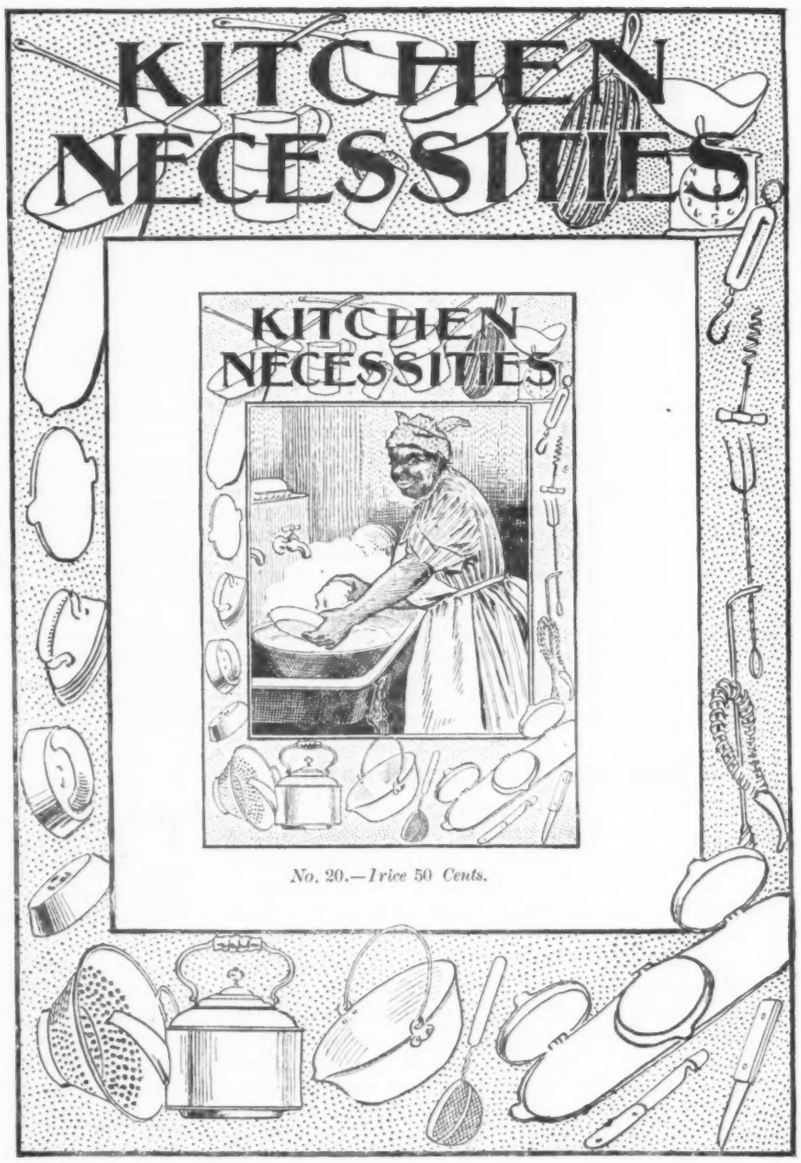
New York.

Advertising Prize Competition.

HARDWARE MERCHANTS' ADVERTISING CUTS.

We illustrate herewith additional cuts for use in connection with the advertising of the retail Hardware merchant. No. 19 is a border 6⅜ x 4⅜ inches, and is intended to be used especially in connection with advertisements relating to Kitchen Utensils. It is mortised so as to permit the use of type in the space in the middle, which is occupied as given here by another cut. The price of this border is $1. No. 20, 3¼ x 3¾ inches, is intended for a single column advertisement, and calls attention also to Kitchen Utensils. Its price is 50 cents. No. 21, which permits of the use of printed matter alongside of the cut in a single column advertisement, is offered at 50 cents.

Any of these cuts, with others in the series, will be sent postpaid on receipt of price by David Williams Company, 232-238 William street, New York.



No. 20.—Price 50 Cents.

No. 19.—Border 6⅜ x 4⅜ Inches.—Price, $1.00.

The Curry Comb and the Saw Horse.

A Curry Comb thought it would be good policy to Curry Favor with a Saw Horse, which stood in a stall in the Hardware Store. The Saw Horse, which, strange to say, though totally bald, was in the Mane all right, was somewhat surprised when the Curry Comb, without any formal introduction, said: "I think you are far superior to those Ordinary Horses that are kept in Stables and eat hay and oats. To begin with, you have four legs that don't need rubbing down, your feet don't have to be shod, and no decayed punster can get off that stale and unprofitable joke on you, 'see that shoo fly!' You never kick or run away, although many a boy has run away from you. Unlike Ordinary Equines, you go through life without a Hitch or Trace of trouble. No one ever says 'gee up' to you or jerks a cruel bit in your jaws; you have no tail to be disfigured by docking and——"

No. 21.—Price 50 Cents.

"Oh please don't go on with your Smooth Compliments," said the Saw Horse, "for I know you will end by congratulating me upon my never coming in contact with Felloes that are Tired or Buggy, all of which jokes were full grown long before the 'shoo fly' chestnut came to life. Praise me as you will, I realize I am a most unsatisfactory Horse. There is one thing that saves me from losing my good disposition and that is, though a Horse, I never allow any one to Nag me. Then, too, I take life easy, and instead of walking the floor I let the other fellow saw wood."

The Wind Mill and the Reporter.

"We should have a fellow feeling for each other," said the Newspaper Reporter to the Wind Mill, "for we are engaged in the same pursuit—namely, pumping."

"True," said the Wind Mill, "but while I am reasonable and do not wish to exhaust my subject you are never contented until you have pumped your victim dry."

In the case of a wind mill, all's well that doesn't end well.

Patent Decision.

THE litigation which has been long pending in the United States Circuit Court, between the Stokes Brothers Mfg. Company of Freehold, N. J., and the Heller Brothers Company of Newark, N. J., based upon patents for machines and processes for making Rasps, has been decided by Judge Kirkpatrick in favor of the Heller Brothers Company. It will doubtless be remembered that the Heller Brothers were also victorious in the early preliminary contest in the same case, before Judge Green. Judge Kirkpatrick, after a technical discussion of the claims of the patents and the evidence in the case, concludes his decision as follows:

I am satisfied from the evidence that the defendant's machines contain neither an anvil frame with pivoted punch stock nor a plurality of hammers with separate springs, and that these are material differences between the devices both in the particular construction of the elements, in the manner and order of their combination, and in the function performed by each. In my opinion, the defendant's machines do not infringe any of the claims of the patents. The differences in the machines above noted are of such a character as necessarily to produce a different result. We have already referred to the distinctive marks and advantages of the Rasps made by the complainant's machines. These we consider to be the result of the manner of their manufacture. Rasps made on defendant's machines differ materially from those of complainant and lack so many of the peculiarities which are claimed to be advantages that I cannot on the record adjudge them to be similar or infringing.

The complainant's bill should be dismissed.

A Bolt and Nut Consolidation.

APPLICATION will be made at Harrisburg, Pa., on August 17 for a charter for the American Iron & Steel Mfg. Company, who will absorb a number of rolling mills and Nut, Bolt and Rivet works in Eastern Pennsylvania. The capital of the new company will consist of 60,000 shares of preferred stock, par value $50 per share, amounting to $3,000,000, which will be issued in payment for the several plants, and 340,000 shares of common stock, $50 per share, amounting to $17,000,000, 10 per cent. of which, or, $1,700,000, will be issued for the payment of the manufactured goods, supplies of materials on hand, now owned by the several companies, and for working capital of the consolidated company, making the present actual capital invested $4,700,000. The entire capital of $20,000,000 will be subscribed for and paid in, excepting 90 per cent. of the common stock, amounting to $15,300,000, which may be called at any time for the purpose of additions or improvements.

The incorporators will be William J. Jackson, Clayton E. Platt, Frederick Maurer, Walter Wolcott and Edward Daly, all of Philadelphia.

The new company will be composed of the well-known Bolt, Nut & Rivet works of J. H. Sternbergh & Son of Reading, Pa.; the Pennsylvania Bolt & Nut Works of Lebanon, Pa.; the Lebanon Iron Company, comprising the rolling mill plant in Lebanon, and the National Bolt, Nut & Rivet Works in Reading, Pa., and the East Lebanon Iron Company of Lebanon.

The plants above mentioned will be taken over by the new company on September 1 next, or as soon thereafter as practicable. Directors of the new company will be chosen from those now connected with the present organizations, and the officers of the new company and the location of the offices will be determined later.

Peck, Stow & Wilcox Company's Catalogue.

A 150-PAGE CATALOGUE of Tinsmiths' Tools and Machines, bearing the dates 1800 and 1900, has been issued as the centennial edition by the Peck, Stow & Wilcox Company, 27 Murray street, New York. Particular attention is directed to specialties such as the Columbian Machines, made with parts interchangeable and with solid frames; also to Squaring Shears, Slip Roll Forming Machines and Bench and Hand Shears. The first 60 pages are devoted to Bench Machines, which are followed by Sheet Iron Folders and Gutter Machines, Squaring Shears for power and hand and Slitting Shears, both straight edge and rotary, Lever Shears and Punches are shown in variety, followed by Hand Shears, Bench Shears and Crimpers and Tinners' Hand Tools and Bench Stakes adapted to regular and special work. Roofing Tongs, and Seamers and Double Seamers and Machines for putting tin together, and Cornice Brakes are shown in variety, as well as Scratch Awls, Pliers, Cutting Nippers, Soldering Coppers and Furnaces for gas and charcoal. The catalogue is one that will appeal to those interested in labor saving tools of this character.

Price-Lists, Circulars, &c.

WEYBURN & BRIGGS COMPANY, Rockford, Ill.: Plow Shares, Lister Shares, Landside Plates, Points and Holders, Tire Upsetters, Clevises, &c.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Catalogue No. 331, season 1899 and 1900, Lamps, Jardinieres, Medallions, &c.

THE UNION NUT & BOLT COMPANY, 107 Chambers street, New York: Illustrated catalogue of 131 pages, showing mainly the goods of the Upson Nut Company, at Unionville, Conn., and Cleveland, Ohio, together with a few leading makes of merchandise dealt in by them. In addition to valuable tables of contents, weights, measurements, &c., there is a copious telegraph code.

B. F. AVERY & SONS, Louisville, Ky.: Circulars illustrating and describing farming implements manufactured by this firm, including Avery's Steel Plows, new Beet Digger and Sub-Soil Plow, Invincible Disk Plow, Avery's Patent U Steel Trees for Walking and Sulky Plows or for use with wagons.

Trade Items.

THE trade will observe in this issue the two-page advertisement of Henry Disston & Sons, Philadelphia, in which they illustrate in colors their extensive line of Buck Saws. It will be seen that a variety of frames, stretchers and blades are thus prominently brought to the attention of the trade.

NANZ & CO., manufacturers of Watchman's Time Detectors, have removed from 116 Chambers street to Graham Building, 127 Duane street, New York.

THE LODI MFG. COMPANY, Lodi, Ohio, makers of Hardware Specialties, have opened an office in Chicago, Ill., at 301 Fifth avenue.

C. L. DEAN, vice-president and general manager of the Ludlow-Saylor Wire Company, St. Louis, has laid out an enjoyable Eastern trip. Leaving home the latter part of this week, he will pass a week at Atlantic City, going thence to Baltimore and by ocean to Boston. After a 10-days' sojourn in the Hub he will return by ocean to Baltimore, and will take a few days to investigate the situation at Washington.

S. A. BIGELOW of the Bigelow & Dowse Company, Boston, departed on Wednesday, 2d inst., on a short European trip, expecting to return early in September.

NO DECISION has yet been announced regarding the differences of Hardware jobbers from Chicago and St. Louis and those from Northern points which were aired at the conference at St. Paul referred to in our last issue. The matter is still under advisement by the railroad officials. In the interval rates will remain the same, and the disadvantages under which the Chicago and St. Louis jobbers claim to work will continue.

THE MERCHANTS' ASSOCIATION of New York is arranging for an exhibit of the various manufactured products of this State, to be shown under its auspices in an appropriate building at the fifty-ninth annual State Fair, Syracuse, N. Y., during the week of September 4-9, inclusive. Arrangements have been perfected with the railroad companies for transportation of all goods to Syracuse and return without cost to the exhibitors, together with free transportation for one or more attendants, as may be required. No charge will be made for space occupied in the building to those exhibiting under their auspices; so that the only cost to intending exhibitors will be the preparation of their exhibits and the expense of attendants during the fair week. Correspondence in regard to space or further information should be addressed to G. W. J. Angell, General Manager Greater New York Exhibit, the Merchants' Association of New York.

J. R. LINN, formerly with F. & W. Clatworthy and more recently with Wiebusch & Hilger, has recently entered the employ of Max Klaas, 98 Duane street, New York. Mr. Klaas manufactures Cutlery in association with his brother in Germany, and imports it for this market.

HALE BROS., Worcester, Mass., who give their entire attention to the manufacture of iron and brass Jack Chains, advise us that they take special care in the packing and finishing of their goods, which Chains, they state, are guaranteed to be made of full gauged wire. This firm also make Chains of special metal and will shape links as ordered.

JOHN J. SINZICH, manager of the Chicago branch of Geo. H. Bishop & Co., manufacturers of Saws and Tools, Lawrenceburg, Ind., has removed from his old location at 179 and 181 Lake street, to 103 Lake street.

AMONG the Special Notices, in the advertisements of this issue, will be found one signed "Metropolitan," seeking the representation of American manufacturers among the great commission houses of London, who buy from almost every market. For many years this gentleman, who is favorably known, has marketed Sheffield manufactures in this country, but the decreasing business in English goods here and his great confidence in the future for American goods abroad suggests this enterprise.

JOB T. PUGH, maker of high grade Auger Bits, Thirty-first and Ludlow streets, Philadelphia, was recently visited by I. Darimont, Brussels, Belgium, who placed with him a large order covering a full line of his goods and arranged for a selling agency for Eastern Europe. Mr. Pugh has also arranged with Andrews & George of Yokohama, Japan, to represent him in the far East, the territory including Japan and Northern Siberia.

AT an adjourned meeting of the stockholders of the Peck, Stow & Wilcox Company, Southington, Conn., held Saturday, July 29, the following directors were chosen for the coming year: A. R. Treadway, W. R. Walkley, Marcellus B. Willcox, M. C. Ogden, S. Howard Wilcox, Frank L. Wilcox, M. H. Holcomb, W. D. Walkley and L. H. Treadway. Subsequently the directors elected the following officers: A. R. Treadway, president; Frank L. Wilcox, vice-president; Stephen Walkley, treasurer, and Edwin Walkley, secretary. Marcellus B. Willcox was made manager of the Eastern factories.

AS APPEARS by their advertisement on another page, T. C. Richards Hardware Company, West Winsted, Conn., are looking for a first-class salesman familiar with Upholstery and Fancy Hardware, &c.

ALDER & BOYD, 37 Warren street, New York, have been appointed exclusive export representatives by C. E. Jennings Company, 101 Reade street, whose entire line of goods are shown in a catalogue recently issued.

Among the Hardware Trade.

McCrory & Kellogg have sold out their business, at Guthrie Center, Iowa, to Geo. W. Umphrey.

Rockaway Hardware & Stove Company, Rockaway, N. J., have been incorporated with a capital of $10,000. In addition to Hardware, House Furnishing Goods, &c., they are conducting a plumbing and heating business.

Lengfelder & Son have succeeded B. Lengfelder, Belleville, Ill. An elegant 55-foot plate glass front has just been put in, and the firm refer to their present store as one of the finest and largest in Southern Illinois. The senior member of the firm is now on a European trip, and the business is being conducted under the management of Henry A. Lengfelder.

John Findlater, Jr., San Angelo, Texas, wholesale and retail Hardware, Stoves, Agricultural Implements, Sporting Goods, Wind Mills, Well Supplies, Engines, Horsepowers, &c., finding business overtaxing his former facilities, has moved his office and entire line of Hardware to a large new store on Main street, reserving his former premises for the Wind Mill and Water Supply business and plumbing and tin shop.

J. H. Kerr is successor to C. B. Foster & Son in the Hardware and Farm Implement business, at Amsley, Neb.

C. & G. Hagelstein Company, San Angelo, Texas, are erecting a new building for their business. The firm are wholesale and retail dealers in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods and Wind Mill Supplies.

H. G. Koehlinger, Fort Wayne, Ind., has admitted a partner in his wholesale and retail Hardware, Stove and Bicycle business in the person of E. Baur, Eaton, Ind., secretary of the Baur Window Glass Company, Eaton. The firm style is Koehlinger & Baur. The establishment has recently been equipped with new shelving, and an electric elevator has also been installed.

C. H. Puckett of Rock Rapids has purchased the Hardware, Stove and Sporting Goods business of Barkee & Krook, Luverne, Minn.

J. A. Brown has bought the general Hardware and Implement stock of S. H. Gordon, at Edmonds, Kan.

The store of Rippley Hardware Company, at Grafton, Ill., was robbed on the 17th ult. of $500 worth of Guns, Pistols and Pocket Cutlery.

The Drake Company, Hardware merchants of Redlands, Cal., have disposed of their plumbing department to T. Fulkerson.

The Carney Hardware Company have purchased the stock of R. W. Haskins, at Ouray, Col., and will continue the wholesale and retail business at the old stand after a remodeling throughout.

D. S. Umbenhauer & Co., formerly Way & Umbenhauer, Anita, Iowa, have succeeded Bowman & Co., retailers of Shelf Hardware, Tinware, Agricultural Implements, Sporting Goods, &c., at Ollie. The new firm have added dry goods and clothing, and have increased the stock in other lines. They refer to business as having nearly doubled during the past month.

The Hardware store of W. F. Hutchinson & Co. was destroyed in the recent conflagration at Livermore Falls, Maine. The firm are now erecting a two-story and basement brick building for their business.

H. T. Williams of Florenceville, Iowa, has opened in the Hardware and grocery business, at Granger, Iowa.

O. P. Anderson, Colton, S. D., has built an addition, 30 x 20 feet, to his Hardware store, and is now handling dry goods, shoes and groceries as well.

Mrs. John Probst, widow of the late John Probst, has decided to continue his Hardware business, at Dieterich, Ill.

G. W. Priest has succeeded J. L. & E. L. Thompson, at Jackson, Mich.

Waibel & Donaldson have dissolved partnership in the retail Hardware and Plumbing business, at Huron, S. D. William Waibel is successor under his own name.

The store of Vordenbaumen & Eastman, Shreveport, La., was recently robbed. The goods have not been recovered, nor have the thieves been apprehended. The firm have lately installed new shelving, which, besides making the store more attractive in appearance, has enabled them to increase their stock. May's business is referred to as having been the best in the history of the concern, who conduct a wholesale as well as retail business.

Patterson, Rutter & Miller have succeeded Ford and Patterson, at Berrien Center, Mich.

Harrison, Lawyer & Co. have disposed of their business, at Webb City, Mo., to Franz-Howell Hardware Company.

The Hanlin Mercantile Company have purchased the Hardware stock of Bretch Bros., at Newton, Kan. The company now have stores at Newton, McPherson, Wellington and Wichita, Kan., as well as at Medford, O. T.

J. A. Lowe & Son have succeeded Coverdale & Lowe, Stark, Kan. The business is being run on a cash basis.

D. E. Cartier of Bowerston, Ohio, has purchased a third interest in the B. J. Goodsell Hardware Company, Ludington, Mich.

The store of G. W. Sebold, at Frackville, Pa., was recently robbed. While the goods were not recovered, three of the burglars were captured, and have commenced serving a term of five years at hard labor in the State prison.

Fifty dollars' worth of Pocket Knives, Revolvers, &c., were taken from the store of Edwin F. Platt, at St. Joseph, Mich., a short time since.

Miscellaneous Notes.

F. Meyrose Lamp & Mfg. Company.

F. Meyrose Lamp & Mfg. Company, St. Louis, Mo., manufacturers of a variety of lamps, table, street, &c.,

and of conductors' and other lanterns, have recently added a line of tubular lanterns and the Dual gas bicycle lamp.

Reed Mfg. Company.

Reed Mfg. Company, Erie, Pa., are putting on the market a line of specialties, including the Reed standard pipe wrench, Reed special wrench for steel rod or pipe, and malleable iron sectional jaw pipe vise. They are also making the Clark pipe hangers and beam clamps and the Reed grape picker, of fluid steel, with brass spring.

Barbers' Supplies.

Challenge Cutlery Corporation, Bridgeport, Conn., of which Wiebusch & Hilger, 11-13 Murray street, New York, are proprietors, have purchased the various trademarks belonging to William Brokhahme of New York, favorably known as a dealer in barbers' supplies. The trade-marks are "Diamond Spear," "Hamburg Ring," and "Speed." The marks are well known in the barbers' supply trade, and henceforth the goods they designate will be vigorously pushed by the new proprietors.

Factory or Warehouse Elevator.

The Franklin Machine Works, St. Paul, Minn., are manufacturing an improved spur gear factory or warehouse elevator, which is especially adapted for electric motor or gas engines or other convenient or inexpensive power. The elevator can be used for either freight or passenger purposes. The gear wheels in this elevator are made from suitably designed iron patterns. The teeth, which are of the involute type, are formed by an automatic gear cutting machine and are absolutely true. This makes a smoothly working gear, which means a smoothly working elevator. The bearings in which the shaft rotate are anti-friction steel roller bearings. The brake apparatus is simple and effective, enabling the platform to be locked at any point of its travel.

Hoyt's Patent Spring Clothes Pin.

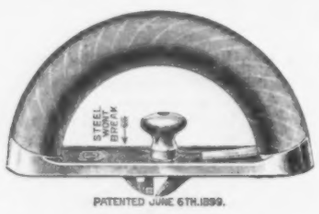
The J. R. Clark Company, Minneapolis, Minn., are now sole manufacturers of Hoyt's patent spring clothes pin. This clothes pin is made with wooden arms which are clamped together by a stout spring. The pin being thus clamped on a clothes line, instead of being pushed on like the ordinary pin, holds the clothes securely and does not tear them. It can be used on either a wire or rope line. The Hoyt pin is offered at an extremely low price and is packed in cartons, each containing three dozen, 20 cartons being packed in a case.

Yale Tubular Rim Night Latch.

Yale & Towne Mfg. Company, Stamford, Conn., have put on the market a new night latch, known as the Yale Tubular rim latch in Nos. 25 and 25½, for up to 1½-inch doors and from 1¾ to 2¼ inch doors, respectively. The cases of each are 2¼ x 3⅝ inches; thickness, ⅞ inch, and back set, 2⅜ inches.

New Sad Iron Handle.

Colebrookdale Iron Company, Pottstown, Pa., are putting a sad iron handle on the market embodying a special feature, as shown herewith. The stretcher and catch of the handle are made of steel, tinned, guaranteed

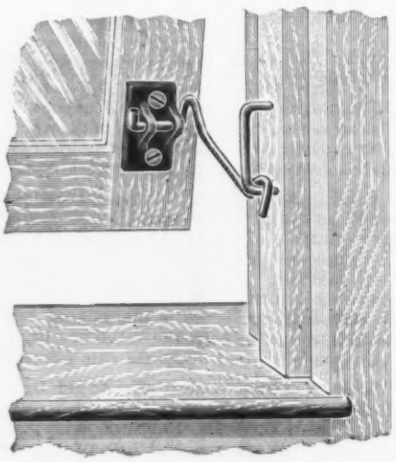


New Sad Iron Handle.

not to break with rough usage. The handles are referred to as being made of the best material throughout, of standard size and perfect. Mrs. Potts' Irons now made by the company are being equipped with this handle.

The Magic Hanger and Fastener.

The accompanying cut of the Magic sash fastener or ventilating rod was shown in an incorrect and misleading position in our issue of last week. The Whaley-Dwyer Company St. Paul, Minn., are manufacturing the hanger and fastener for storm sash and window screens. We would refer our readers to the full description of the

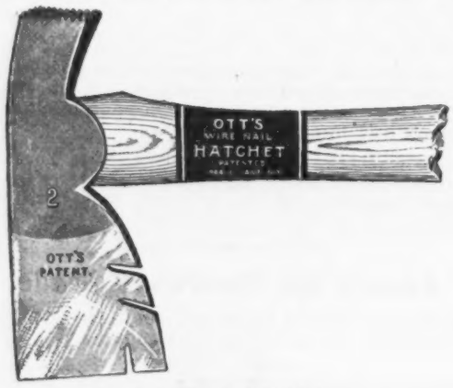


Magic Sash Fastener or Ventilating Rod.

device, with two illustrations, which appeared in *The Iron Age*, July 27.

Ott's Wire Nail Hatchet.

Ott's Wire Nail Hatchet Company, 944 Sixth avenue, New York, are offering the hatchet shown in the accompanying cut. The principal feature of the hatchet is the slots for pulling nails. These, it is remarked, are just in the right places to allow of pulling nails from usually



Ott's Wire Nail Hatchet.

difficult places, such as corners, convex surfaces, &c. The claim is made that with the tool time and labor may be saved in removing the smallest or largest nails from boxes, barrels, &c. The hatchet is made in four sizes and, it is stated, of the best material.

Patent Seamless Tea and Coffee Pot.

The Lalance & Grosjean Mfg. Company, 19 Cliff street, New York, have just added to their long line of enameled household utensils a new seamless teapot and a seamless coffee pot, for which patents have been secured.

Patent Seamless Tea Pot.

Patent Seamless Coffee Pot.

These articles, which are shown in the accompanying illustrations, are made entirely of one piece of metal by a new and ingenious process. As will be seen, they are smaller in diameter at the top than at the bottom. The pots are made in eight sizes, of ½, ¾, 1, 1½, 2, 3, 4 and 5 quarts, and are finished in agate nickel steel, pearl agate, blue and white and all white enameled ware. The covers are furnished either enameled or retinned.

Acme Ball Bearing Casters.

Acme Ball Bearing Caster Company, 220 Broadway, New York, are the manufacturers of the Acme ball bearing casters, a few samples of which we here illustrate. In this caster there is one large steel surface ball that contacts with the floor and is held in a cup, Fig. 1, revolving upon a large number of small anti-friction steel balls that move upon a steel cup shaped disk. Surrounding the disk are many of the balls (about 60 in a 1-inch caster) that automatically interchange with each other as the large central ball revolves one way or another. Every movement of the surface ball shifts all the smaller ones upon the disk, thus constantly bringing others into active play, revolving freely upon the steel disk without appreciable friction or likelihood of clogging. Regular sizes of casters are made for chairs, bureaus, bedsteads, wardrobes, dressers, sideboards, dining and fancy tables, pianos, organs, safes, &c Special casters are made to meet vary-

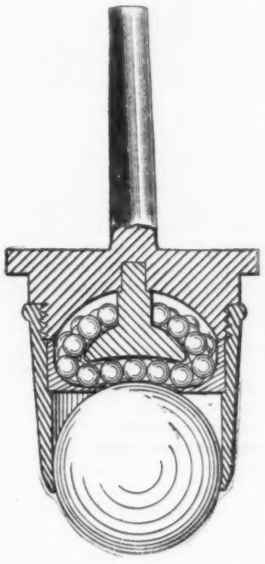


Fig. 1.—Sectional View of Acme Ball Bearing Caster.

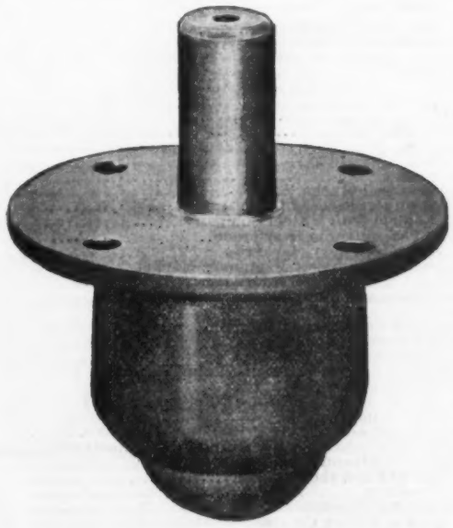


Fig. 2.—Caster with 1-Inch Ball, with or without Plate.

ing requirements, as for brass or iron bedsteads, folding beds, sewing machines having either iron frames or cabinets, desks bookcases, &c. Important advantages referred to are avoidance of lateral strain on furniture, cracking or splitting of chair legs, &c., and the ease with which heavy objects can be moved by women and children. The weight of the furniture is always on the large surface ball direct and the center of gravity is the center of the caster. This caster is made in a large number of sizes, from those having a ¾-inch surface ball to others having a 3-inch surface ball for safes or similar heavy articles. They are made with sockets, posts, plates, central screw and in other special forms and in such metals as brass, malleable iron, aluminum and steel.

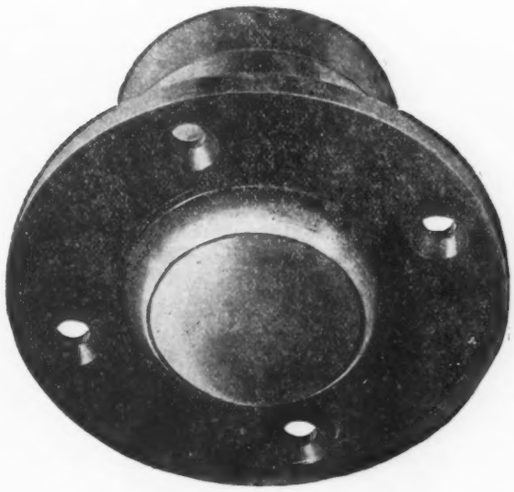


Fig. 3.—Caster with 1¼-Inch Ball for Countersunk Setting.

When desired casters can be used that do not show when in position at all.

A New Shell.

The new shell herewith shown has just been put on the market by the Peters Cartridge Company, Cincinnati, Ohio, and is designated as the Ideal. It is designed for the most perfect shooting of modern nitro powders. The paper in the shell is a cherry red color and has a high

A New Shell.

brass reinforcement. The heavy battery cup holds the Peters No. 5 primer, which is specially designed to give instant ignition to any of the standard nitro powders, but, it is pointed out, without danger of detonating. The shell is on the market both empty and loaded. The company are loading it with King's smokeless powder, Peters' elastic felt wad and their own make of shot. All loaded in such a manner, its makers claim, as to develop high velocity, while at the same time the pressure and recoil are light and the pattern full and even.

Globe Banks.

The accompanying engraving shows the Globe bank which the Grey Iron Casting Company, Mount Joy, Pa., are putting on the market. The bank is made of cast iron throughout and revolves. It is supplied in different colors, with the names of the continents and principal islands brought out in bronze.

Globe Banks.

Cow Tie and Stall Fixture.

The accompanying cut represents the Dominion pattern cow tie and stall fixture which the Oneida Community, Niagara Falls, N. Y., are now making in "the States." As the names indicate, the tie and fixture were first made in Canada, where their manufacture was begun several years ago. A feature of the tie is the short chain to prevent danger of entanglement with the animal's foot. At the same time, it is pointed out, the form

Cow Tie and Stall Fixture.

of the fixture is such as to allow great freedom of the head. Because of the short chain, it is remarked, the tie is much cheaper than the ordinary patterns. The fixture is made of a tough quality of steel to render it strong, and has a circular cross section to make it rigid, so as not to be easily bent. The tie is made in American and Niagara chain, and the device is referred to as simple, convenient and easily attached.

Toy Ranges.

The Grey Iron Casting Company, Mount Joy, Pa., are introducing the toy range here shown. The article is of cast iron, nickel plated, with polished edges and orna-

Toy Ranges.

mentation. It is 8¼ inches long, 4⅝ inches wide and 5 inches high. Each range is furnished with one length of pipe and with utensils and is packed one in a box, three dozen in a case.

Whitney Company, Albuquerque, N. M., have sold out their furniture, carpet and fancy crockery departments, and are now devoting all their time and attention to the prosecution of their wholesale and retail Hardware and wholesale domestic crockery business. They handle both Shelf and Heavy Hardware, Stoves, Agricultural Implements, Mining and Mill Supplies, as well as conducting complete plumbing and tin shops. Their business extends over New Mexico and Arizona, and has been especially good during the past two or three years. They have just made an addition of 25 feet to their store on First street, which gives them a total frontage of 75 feet.

The Stephenson Hardware Company, Oxford, Ohio, have been incorporated with a capital stock of $10,000. Their business is wholesale and retail Shelf and Heavy Hardware, Stoves and Tinware, Sporting and Athletic Goods, Plumbing, &c., and is referred to as exceedingly encouraging, being 35 per cent. better than last year for the same period. The business was established 50 years ago, and under the new management will be modernized in every department. Extensive improvements are under way, including a new plate glass front, newly decorated interior and inclosed box shelving.

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Current Hardware Prices.

REVISED AUGUST 1, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, and are in many cases their regular prices to the small trade, lower prices being frequently quoted to the fair retail trade, both by the manufacturers and the jobbers.

Cut Prices.—*In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—
Domestic, ₱ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—
Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....₱ ℔ 7¼@7¾¢
Hay-Budden, Wrought.....8¼@8¾¢
Horseshoe brand, Wrought.....9¼@9¾¢
Samson.....₱ ℔ 7¾@8¢
Trenton, Wrought.....₱ ℔ 8¼@8¾¢

Imported—
Armitage's Mouse Hole.....8¾@9¼¢
Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—
Common Double Spur..70¢10@75¢5%
Boring Machine Augers.....70¢10@75¢5%
Car Bits, 12-in. twist.....60¢10¢10@70%
Jennings' Pattern:
Auger Bits.....60¢10¢10@70%
Ford's Auger and Car Bits..40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.....40@40&10%
No. 30. R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....70%
Snell's Bell Hangers' Bits.....5%
Snell's Car Bits.....60&10&5@70%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—
Standard List .....60¢10¢10@70¢5%

Expansive Bits—
Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
Steer's No. 1, $36; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—
Common Double Cut..gro. $2.75@3.25
German Pattern.....gro. $5.00@5.50
Double Cut, makers' lists.....50¢5@50&10%

Hollow Augers—
Bonney's Adjustable, ₱ doz.....$18.00
Douglass'.....33⅓@33⅓&10%
Stearns', Common, No. 8.....10%
Stearns', all other numbers.....20&10%

Ship Augers and Bits—
Ford's.....40&10@40&10&10%
Snell's.....40@40&10%
L'Hommedieu's.....15&10@15&10&10%
Watrous'.....40@40&10%

Awl Hafts, See *Hafts, Awl.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.10
Unhandled, Shouldered gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.00@3.75
Handled, Socket..gro. $11.00@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
First Quality, best brands.$5.25@5.50
First Quality, other brands$4.50@4.75
Jobbers' Special Brands:
Good Quality.....$4.25@4.50
Best Quality .....$5.00@5.25
Cheap Handled Axes .....$4.50@4.75
Good Handled Axes .....$5 00@5.25
Beveled, add 25c doz.

Axle Grease—See *Grease, Axle.*

Axles—

	Iron.	Steel.	
Concord, loose collar...	5¼c	5 c	5% cash
Concord, solid collar...	5¾c	5½c	
No. 1 Common.....	4 c	3¾c	
No. 1½ Com. New Style..	4½c	4¾c	
No. 2. Solid Collar.....	4¾c	4½c	
Nos. 7, 8, 11 to 14.....		.60&5%	
Nos. 7, 8, 11 to 14, 100 sets..extra		10%	
Nos. 15 to 18.....		50%	
Nos. 19 to 22.....		70%	

Balances—

Sash—
Caldwell low list.....30%
Pullman's.....65%
Vanderbilt.....30%

Spring—
Spring Balances .....50@50&5%
Chat llon's Light Spg. Balances.....50%
Chatillon Straight Balances.....40&10%
Chatillon Circular Balances.....50&10%
Chatillon's Large Dial.....35%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb., per lb... 5@5½c

Beams, Scale—
Scale Beams, List Jan. 12, '82.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters— Egg—
(Standard Co.), Dover No. 10, ₱ gro. $6.5; No. 5, $3.75; No. 15, $14.00
(Taplin Mfg. Co.) Dover No. 50, ₱ gro. $3.25; to 100 $6.25; No. 102, $8.00; No. 150, ₱ doz. $1.50; No. 152 $2.00.
Lyon's, Standard Iz.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ doz. 75¢

Bellows—

Blacksmith—
Standard List.....70@70&5%

Inch..	30	32	34	36	38	40	Net Prices.
Each..	$4.25	4.50	5.25	5.75	6.50	7.75	
Extra Length:							
Each..	$4.75	5.25	5.75	6.50	7.40	8.75	

Molders—

Inch..	9	10	11	12	14	16	Net Prices.
Doz...	$6 75	7.25	8.50	9.50	12.00	14.50	

Hand—

Inch...	6	7	8	9	10	12	Net Prices.
Doz....	$3.75	4.25	4.50	5.00	5.75	6.75	

Bells— Cow—
Ordinary goods.....75¢10%
High grade.....70@70¢10%
Jersey.....75@75&10%
Texas Star.....50&10%

Door—
Gong, Yankee.....60&10%
Home, R. & E. Mfg. Co.'s.....50&10%
Lever and Pull, Sargent's.....45&10@45&10&5%

Hand—
Hand Bells, Polished.....65&10@70%
White Metal.....65&10@70%
Nickel Plated.....50&5@50&10¢5%
Swiss .....65@65&10%

Miscellaneous—
Farm Bells.....lb. 2@2½c
Steel Alloy Church and School.....50&10@60%

Belting

Rubber—
Common Standard.....70&10@75%
Standard.....60¢10@70%
Extra.....60@60&10%
High Grade.....60@60&10%

Leather—
Extra Heavy, Short Lap .....50¢10%
Regular Short Lap .....60@60¢5%
Standard .....60¢10@60¢10¢5%
Light Standard.....70¢10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—
Brettell Tire Upsetter, $15.....50%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—
Lane's Cycle Hanger.....33⅓&5%
John S. Long's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks— Tackle—
Common Wooden...75¢10@75¢10¢5%
Eddy's Steel.....60&10@70%
Hartz Steel.....50&10@60%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand...50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards, Stove—
1899 List:
Zinc.....30%
Others.....40%

Bolts—

Carriage, Machine, &c.—
Common, list Jan. 30, '95.50¢10@60&..75¢10@75¢10¢5%
Norway Iron, $3.00, list Oct. 7, '84..80@80¢10%
Phila. Eagle, $3.00 list.....80@80¢10%
Bolt Ends, list Jan. 30, '95.....60@60¢10¢.....%
Machine, list June 12, '96.....60@60¢10&..

NOTE.—*Jobbers' prices on Bolts are now generally lower than manufacturers'.*

Door and Shutter—
Cast Iron Barrel, Round Brass Knob:

Inch.....	3	4	5	6	8
Per doz...	$0.27	.30	.38	.48	.66

Cast Iron Bottom, Japanned:

Inch	6	8	10
Per doz.....	$0.83	1.05	1.65

Cast Iron Chain, Flat, Japanned:

Inch.....	6	8	10
Per doz	$1.10	1.32	1.87

Cast Iron Shutter, Brass Knobs:

Inch.....	6	8	10
Per doz.....	$0.49	.77	.88

Wrought Barrel Brass Knob:

Inch.....	3	4	5	6	8
Per doz	$0.44	.50	.61	.70	1.28

Wrought Barrel .. ..75&5@75¢10¢5%
Wrought Barrel, Bronzed..60@60¢5%
Wrought Flush. B. K.....50¢20@70%
Wrought Shutter..... .60@60¢10¢5%
Wrought Square Neck.....70@70¢10%
Wrought Sunk.....60@60¢10%
Ives' Patent Door.....62½@62½&10%

Stove and Plow—
Plow .....70@70¢10%
Stove, list August 27, 1898.....65%
Note.—See Trade Report.

Tire—
Common, list Feb. 28, '83..65@65¢....%
American Screw Company
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Bay State, list Feb. 28, '83.....65%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Eclipse, list Feb. 28, '83.....65%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....65%
Keystone Phila., list Oct. '84.....75%
Norway Phila., list Oct. '84.....70%

Borers, Tap—
Borers Tap, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz...	$3.50	4.50	5.00	6 50
Inch		2¼		2½
Per Doz.....		$7.50		10.25

Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.

Boring Machines—See *Machines, Boring.*

Boxes, Mitre—
Seave 's, each $4.00.....50%

Braces—
NOTE.—*Most Braces are sold at net prices.*
Common Ball, American..$1.10@1 20
Barber's.....60@60&10%
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....60&10&5@60&10&10%

Brackets—
Cast Iron, plain..... 75@75¢10%
Wrought Steel .....70¢10@75%
Bradley's Wire Shelf.....75&10@80%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—
Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—
Hoosier.....₱ gro. $22.00@$24.00

Bull Rings—See *Rings, Bull.*

Butts— Brass—
Wrought list Sept., '96.....30@40%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad..... 60@60¢10%
Fast Joint, Narrow.....
60¢10@60¢10&10%
Loose Joint.....
Loose Pin..... 75@75¢10%
Mayer's Hinges.....
Parliament Butts.....

Wrought Steel—
Loose Joint.....
Table and Back Flaps..
Narrow and Broad..... 75@75¢5%
Inside Blind.....
Loose Pin.....
Loose Pin, Ball and Steeple Tip.... 80@80&5%
Bronzed Wrought Narrow and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....10%
1200 series.....40%
200, 300, 600 and 900 series.40&10@50%
Hendryx Bronze:
700, 800 series.....40&10@50%
Hendryx Enameled.....40&10@50%

Calipers—See *Compasses.*

Calks, Toe—
Burke's, One Prong, Blunt.....5¢ } 10&5 @10 &5&
Burke's, One Prong, Sharp.....6¢ }
Burke's, Two Prong, Blant.....6¢ }
Burke's, Two Prong, Sharp....7¢ } 5%

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern:	5	8	10 gal.	
		$3.60	$4.00	..40%
Illinois Pattern...	$2 00	3.10	3.50	..40%
Iowa Pattern.....	2.25	3.35	3.75	..40%
	20	30	40	qts.
New York Patt'rn	2.25	2.50	2.65	
Baltimore Patt'rn	2.35	2.50	2.75	

Cans, Oil—
Galvanized Blue Band, 1-gal., ₱ doz. $1.60@$1.80
S. S. & Co., Galvanized Family with faucet, 3-gal., ₱ gro. $54, 5-gal., $60; 10-gal., $180.00
Glass Oil.....₱ doz. $1.60@$1.85

Caps—Percussion—
Eley's E. B.....50c
G. D .....per M 32@34c
F. L.....per M 37@40c
G. E.....per M 47@50c
Musket.....per M 57@60c

Primers—

Berdan Primers, $1.00 ..... 2%
B. L. Caps (Sturtevant Shells) $1.00 ..... 2%
All other primers ..... $1.00@$1.10

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con., Ball Swgd. $1.90
B. B Caps, Round Ball ..... $1.12@1.18
Blank Cartridges:
32 C. F., $5 50 ..... 2%
38 C. F., $7 00 ..... 2%
22 cal. Rim, $1.50 ..... 2%
32 cal. Rim $2.75 ..... 2%
Central Fire ..... 15&5&2%
Pistol and Rifle ..... 25&5&2%
Primed Shells and Bullets ..... 15&5&2%
Rim Fire Sporting ..... 50&2%
Rim Fire, Military ..... 15&5&2%

Casters—

Bed ..... 70&5@70&10%
Plate ..... 60@60&10%
Plate, part Brass 60%
Philadelphia ..... 70&5@70&10%
Martin's Patent (Phœnix) ..... 60@60&5%
Payson's Anti-friction Furniture ..... 70&10&5%
Payson's Anti-Friction Truck ..... 60&10&5%
Standard Ball Bearing 50%
Tucker's Patent, low list ..... 50@50&5%

Cattle Leaders—

See *Leaders, Cattle.*

Chain—

American Coil, Cask Lots:

5-16	¼	5-16	⅜	7-16	½	9-16
8.00	6.25	5.25	4.50	4.35	4.25	4.15
⅝	¾	⅞	1 inch.			
4.05	4.00	3.90	3.90 cents per lb.			

Less than Cask lots add ¼c. per lb.
German Coil, list July 24, '97 ..... 60&10@60&10&10%
German Halter Chain, list July 24, '97 ..... 60&10@60&10&10%
Trace, Wagon and Fancy Chains, list April, '98 ..... 60@—%
Jack Chain, list July 10, '98:
Iron ..... 70@70&10%
Brass ..... 50&10@60%
Gal. Pump Chain ..... lb. 4½@4¾c
Breast, Hitching and Rein Chains
Covert Saddlery Works 70%
Covert Mfg. Co.:
Breast ..... 40&2%
Halter ..... 40&2%
Heel ..... 40&2%
Rein ..... 40&2%
Stallion ..... 40&2%
Oneida Community:
Niagara and Eureka Weldless Coil and Halters ..... 65@65&10%
Niagara and Eureka Weldless Cow Ties ..... 55&5@60%
American Coil and Halters ..... 55&5@60%
American Cow Ties ..... 50@50&10%

Chalk—(From Jobbers.)

Carpenters', Blue ..... gro. 50@52c
Carpenters', Red ..... gro. 45@47c
Carpenters', White ..... gro. 40@42c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's 40%
Columbia ..... 50&10%
Eclipse ..... 60@60&10%

Chisels—

Socket Framing and Firmer

Standard List ..... 75&5@75&10%
Buck Bros. 30%
Charles Buck 30%
Swan's ..... 75@75&5@2½%
L. & I. J. White ..... 30@30&5%

Tanged—

Tanged Firmers ..... 40&10@50%
Buck Bros. 30%
Charles Buck 30%
L. & I. J. White, Tanged ..... 30&5%

Cold—

Cold Chisels, good quality lb. 14@16c
Cold Chisels, fair quality ..... *lb. 12c*
Cold Chisels, ordinary ..... *lb. 7@7½c*

Chucks—

Beach Pat., each $8.00 ..... 20%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks 30%
Independent Lathe Chucks 40%
Improved Planer Chucks 20%
Universal Lathe Chucks 40%
Union Mfg. Co.:
Combination 40%
Czar Drill 30%
Geared Scroll 33⅓%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—

Adjustable, Hammers' ..... 20@20&5%
Adjustable, Stearns' ..... 30@30&10%
Cabinet, Sargent ..... 45&10@50&10%
Carriage Makers', P., S. & W. Co. ..... 40&10%
Carriage Makers', Sargent's ..... 50&10@50&10&5%
Beaty, Parallel ..... 33⅓&10%
Saw Clamps, see *Vises, Saw Filers'.*
Stearns Malleable, with Wrought Iron Screw ..... 75@75&5%
Stearns Steel ..... 25&10%

Cleaners, Walk—

Star Socket, All Steel ..... ₱ doz. $4.00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net

Cleavers, Butchers'—

Foster Bros., Flat hdl., 30%; Rd. hdl., 40%
New Haven Edge Tool Co.'s 40%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%
Fayette R. Plumb 25%
P., S. & W ..... 33⅓&5@33⅓&10%
L. & I. J. White 25%

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet ..... ₱ doz. $7.20
Mascotte Toilet ..... ₱ doz. $8.40
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

Clips, Axle—

Eagle and Superior ¼ and 5-16 inch ..... 70&10@75%
Norway, ¼ and 5-16 inch ..... 70@70&5%

Cloth and Netting, Wire

—*See Wire, &c.*

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) ..... 70@70&5%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Brass, Pope & Stevens' list 40%
Embossed, Gilt, Pope & Stevens' list ..... 30&10%
Leather, Pope & Stevens' list 40%

Compasses, Dividers, &c.

Ordinary Goods ..... 70&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 70%
Calipers, Inside or Outside 70%
Calipers, Wing 60%
Compasses ..... 50&5%
J. Stevens A. & T. Co. ..... 25&10%

Coolers, Water—

S. S. & Co.: 2-gal., $15.40; 3-gal., $17.60; 4-gal., $19.85; 6-gal., $25.50.

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab ..... lb. 21@23c
Braided, White, lb ..... 15@20c
Cable Laid Italian ..... lb. A, 18c; B, 16c
Common India ..... lb. 8½@9c
Cotton Sash Cord, Twisted ..... 10@15c
Patent Russia ..... lb. 12 @13c
Cable Laid Russia ..... lb. 13½@14c
India Hemp, Braided ..... lb. 14@15c
India Hemp ..... lb. 9@10c
Patent India ..... lb. 10 c
Pearl Braided, cotton ..... ₱ lb 16¢
Massachusetts, White ..... ₱ lb 20¢
Massachusetts, Drab ..... ₱ lb 24¢
Eddy tone Braided Cotton ..... ₱ lb 18¢
Harmony Cable Laid Italian ..... ₱ lb 18¢
Ossawan Mills:
Crown, Solid Braided White ..... ₱ lb 17¢
Braided, Giant, White ..... ₱ lb 16¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 13¢
Cable Laid India ..... 11¢
Braided India ..... 18¢
Phœnix, White ..... 17¢
Samson:
Braided, Drab Cotton ..... ₱ lb 31¢
Braided, Italian Hemp ..... ₱ lb 31¢
Braided, Linen ..... ₱ lb 44¢
Braided, White Cotton, Spot ..... ₱ lb 27¢
Silver Lake:
A quality, Drab, 40¢ ..... 15&10%
A quality, White, 35¢ ..... 15&10%
B quality, Drab, 35¢ ..... 15&10%
B quality, White, 30¢ ..... 15& 0%
Italian Hemp, 40¢ ..... 15&10%
Linen, 57½¢ ..... 15&10%

Wire, Picture—

Braided or Twisted ..... 80@80&10%

Corn Knives and Cutters

—See *Knives, Corn.*

Crackers, Nut—

Acme, Japanned, ₱ gr. $30 ..... 40%
Acme, Nickel Plated, ₱ gr. $30 ..... 20%
Turner & Seymour Mfg. Co. 50%

Cradles—

Grain 55%

Crayons—

White Round Crayons, gross ..... 5@8c
Cases, 100 gro., $4.50@$5.00, at factory.
D. M. Steward Mfg. Co.:
Metal Workers', ₱ gr. $2.50 ..... 20@25%
Railroad, ₱ gr. $2.00 ..... 20@25%
Rolling Mill, ₱ gr. $2.50 ..... 20@25%
Soapstone Pencils, ₱ gr. $1.50 ..... 20@25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden ..... ₱ doz. $10.00

Cutters— Meat—

American 30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50	$60

Connecticut:

Nos.	0	1	8	10	12
Each	$1.75	2.25	3.00	3.00	3.50

Enterprise ..... 25&25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₱ doz. 33⅓%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ₱ doz. 70%

Nos.	11	12	13
	$27.00	$36.00	$45.00

Home No. 1, ₱ doz. $26.00 ..... 60%
Little Giant, ₱ doz. ..... 50&10%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$75.00	$68.00

Miles' Challenge, ₱ doz. ..... 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₱ doz. $24.00 ..... 33⅓&5%
Woodruff's, ₱ doz 33⅓%

Nos.	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—

Henry Diss on & Sons:
Slaw, Cabbage Grater, &c. 40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9 ..... 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 50@50&10%
Slaw Cutters, 1 Knife, ₱ gr. ..... $15@$18
Slaw Cutters, 2 Knife, ₱ gr. ..... $20@$27

Tobacco—

All Iron, Cheap ..... doz. $4.50@$5 00
Enterprise ..... 25&30%
National, ₱ doz. $21.00 ..... 30&5%
Sargent's, ₱ doz. $24.00 ..... 60@60&10%

Washer—

Appleton's, ₱ doz. $16.00 ..... 60&10@60&10&10%
Bonney's ..... ₱ doz. $4.75

Diggers, Post Hole, &c.—

Iwan's Improved Post Hole Auger ..... 40&5%
Iwan's Perfection Post Hole Digger ..... ₱ doz. $10.00
Samson, ₱ doz. $34.00 ..... 25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill ..... *each $1.50@$1.60*
Blacksmiths' Self-feeding ..... *each $5.00@6.00*
Bench Drills, Stearns' ..... 50@50&10%
Breast, Millers Falls, each $3.00 ..... 25%
Breast, P., S. & W. ..... 40&10%
Goodell Automatic Drills ..... 40&5@40&10%
Ratchet, Bignall & Keeler ..... 30&5%
Ratchet, Curtis & Curtis 25%
Ratchet, Ingersoll's 25%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's ..... 20&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓%

Twist Drills—

Standard List ..... 60c&10&10@70c&5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9 ..... 40%
Buck Bros. 30%
Buck Bros' Screw Driver Bits 27½%
Champion ..... 40&10%
Disston's Flat Blade, Electric, &c. 70%
Douglass Mfg. Co. ..... 20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 ..... 50%
Gay & Parsons' Ratchet 30%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
New England Specialty Co. ..... 50&10%
New York, Manhattan and Handy 20%
Sargent & Co.'s:
Nos. 1, 20, 40 and 60 ..... 50&10&10@50&10&5%
Nos. 50 and 55 ..... 50&10&10@60&5%
Screw Driver Bits ..... ₱ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 70&10%
No. 86 ..... 75&10%

Egg Beaters—See *Beaters, Egg.*

Emery—*Nos. 4 to 54 to Flour, CF:*

	46 gro.	180 gro.	F.F.F.
Kegs ..... lb.	4¾c	5 c	5 c
½ Kegs ..... lb.	4¾c	5¼c	5¼c
¼ Kegs ..... lb.	5 c	5¼c	5¼c
10-lb cans, 10 in case	6 c	6¼c	6¼c
10-lb. cans, less than 10	10 c	10 c	8c

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice

—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's ..... 50&10%

Faucets—

Cork Lined ..... 70&5@70&10&5%
Metallic Key, Leather Lined ..... 65&10@70%
Red Cedar ..... 60@50&10%
B. & L. B. Co.:
West's Lock, Open and Shut Key ..... 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's No Brand Metal Key 60%
John Sommer's W. P. Metal Key 40%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined 50%
John Sommer's Reliable Cork Lined 60%
John Sommer's Common Cork Lined 70%
John Sommer's Chicago Cork Lined 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's Perfection Cedar 40%
Star ..... 60@60&5%
Star, Metal Plug, new list ..... 40@40&5%
Stearns' Wood, No. 200, Wood-lined Key ..... 50&10%
Stearns' Matchless, Wood, No. 300 ..... 60%
Stearns' Gem, Wood, No. 400 ..... 60&10%
Lockport, Metal Plug, reduced list ..... 60&5%
Self Measuring:
Enterprise, ₱ doz. $36.00 ..... 40%
Lane's, ₱ doz. $36.00 ..... 33⅓%
National Measuring, ₱ doz. $36.00 ..... 33⅓%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised June 1, 1899.

Best Brands ..... 70@70c10&10%
Good Brands ..... 75&10@80&5%
Fair Brands ..... 80&5@80&10%
Second Quality ..... 80&10@85%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 ..... 25%

Fixtures, Grindstone—

Net Prices:

Inch	15	17	19	21	24
Per doz.	$2.50	2 60	2.95	3.35	4.50

Stowell's Grant Grindstone Hanger ..... ₱ doz. $6.00@7.00
Stowell's Grindstone Fixtures ..... 35&10%
P., S. & W. Co. ..... 50&10&10%
Reading Hardware Co. ..... 30&20&10%
Sargent's Patent ..... 70&10@70&10&10%

Fluting Machines—

See *Machines, Fluting.*

Fodder Squeezers—

See *Squeezers, Fodder.*

Forks—

Old, or 1895 list, Hay, Manure, &c. ..... 60&10@60&10&5%
1898, or High list,
Hay, 2 tine ..... 70&2%
Hay, 3 tine ..... 70&2%
Manure, 4 tine ..... 65%&20&2%
Manure, 5 and 6 tine ..... 70&10&2%
Spading ..... 70&15&2%
Victor, Hay ..... 60&33⅓&2½&2%
Victor, Manure ..... 77 15&2%
Victor, Header ..... 70&12½&2%
Champion, Hay ..... 70&10&2%
Champion, Manure ..... 75&2%
Columbia, Hay ..... 70&7½&2%
Columbia, Manure ..... 75&5&2%
Columbia, Spading ..... 66⅔&25&2%
Hawkeye Wood Barley 4 tine ₱ doz $5.00; 6 tine, $5.50.
Plated.—See *Spoons.*

1899 or high list

Frames—

Saw—

Red, Polished and Varnished ..... *doz. $1 00@$1 10*
White ..... *gro. $3.25@$3.50*

Screens, Window and Door—

Bonanza Window Screens ..... 60@60&5%
Phillips' Window Screen Frames ..... 60&5%
Porter's Extension Window Screens ..... 60&5%
Stearns' Frames and Corners ..... 25@25&10%
Stearns' Monarch Adjustable Window Screens 50%
Stearns' Gem Window Screen Frames ..... 25&10%
Wabash Spring Adj. Screen 50%
Warner's Screen Corner Irons ..... 33⅓&10%

Freezers, Ice Cream—

Qts...	2	3	4	6	8	10
Best	$1.40	1 60	1.85	2.30	3.00	3.90
Good	$1 25	1.35	1.90	2 05	2 65	3.50
Fair	$1.00	1.10	1 50	1.75	2.30	2.90

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.
Hemp Fuse	$2.60
Cotton Fuse	2.90
Single Taped Fuse	3.50
Double Taped Fuse	4.70
Triple Taped Fuse	5.70

10%

Gates, Molasses and Oil—

Stebbin's ..... 80&20@85%
Stearns' Molasses and Oil ..... 30&10%

Gauges—

Marking, Mortise, &c. ..... 60&10@60&10&10%
Barrett's Comb. Roller Gauge ..... ₱ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Rabbet Gauge ..... 25&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—
Nail, Metal, Assorted, gro. $1.50@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro. $4.00@4.50
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window
List Jan. 1, 1898.
Small lots from store:
Eastern ..... 80&20%
Western ..... 80&20@85&5%
From Factory, with Frt. Allowance:
Carloads ..... 80&20%
1000 boxes or more, Gulf Ports ..... 85&10%
5000 boxes or more ..... 85@85&2½%
5000 boxes or more ..... 85&5%

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush. ..... 37½@50%
List B, Cans (½ pts., pts., qts.) ..... 33⅓@48%
List C, Cans (½ gal., gal.) ..... 25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Allerton's Axle:
1 lb Tins, ₩ gr. $9.00
3 lb Tin Pails, ₩ doz., $2.00; 5 lb, $3.00; 10 lb, $6.00.
25 lb wood pails ..... ₩ doz. $12.00
Dixon's Everlasting, 10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs., ₩ doz. 1 lb $1.20; 2 lb $2.00
Lower grades, special brands, ₩ gr. $5.00@6.50

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
	gro.
Peg Patent, Leather Top	$4.90@5.25
Peg Patent, Plain Top	$3 50@3 75
Sewing, Brass Ferrule	$1.50@1 60
Saddlers'. Brass Ferrule	$1.35@1 45
Peg, Common	$1.25@1 35
Brad. Common	$1.35@1.50

Halters and Ties—
Covert Mfg. Co., Web ..... 45&2%
Covert Mfg. Co., Jute Rope ..... 45&2%
Covert Mfg. Co., Sisal Rope ..... 35&2%
Covert's Saddlery Works', 96 list 70%

Hammers—
Handled Hammers—
Heller's Machinists' ..... 40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%
Pece, Stow & Wilcox ..... 40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail ..... 33⅓&7½%
Engineers' and B. S. Hand ..... 50&10%
Machinists' Hammers ..... 50&10%
A. E. & A. E., Bell Face Nail ..... 33⅓&7½%
Sargent's C. S. New List ..... 45&50%

Heavy Hammers and Sledges—
3 lb. and under ..... *lb. 45c*
3 to 5 lb ..... *lb. 36c* } 75&10@80%
Over 5 lb ..... *lb. 30c*
Note.—Lower net prices sometimes made by jobbers.
Wilkinson's Smiths' ..... 9½c@10c lb.

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Hoe, Rake, Fork, &c. 60&10@60&10&5%
Shovel, &c., Wood D Handle ..... 60&10%

Cross-Cut Saw Handles—
Atkins' 40%
Champion ..... 45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted ..... *gro. $2.25@$2 50*
Auger, large ..... *gro. $2.75@$3 00*
Brad Awl ..... *gro. $1.40@$1.50*
Chisel Handles:
Apple Firmer, gro ass'd. $2.25@$2 50; large, $2.75@$3.00.
Hickory Firmer, gro ass'd. $2.25@$2.50; large, $2 50@$2.75.
Socket, gro. ass'd, Firmer, $1.50@$1.60; Framing, $2.50@$2 75.
File, assorted ..... *gro. $1 00@$1.15*
Hammer, Hatchet, Axe, &c ..... 60&10%
Hoe, Rake and Fork ..... 60&10@60&10&5%
Shovel and Spade, Wood D H'dle ..... 60&17%
Hand Saw, Varnished, doz. 75@80c
Not Varnished ..... 55@60c
Plane Handles:
Jack, doz. 23@25c; Jack Bolted ..... 55@60c
Fore, doz. 35@38c; Fore, Bolted ..... 70@75c

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$1.28	1.68	2.16	2.64	3.30

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$2.86	3.74	4 84	6.16

Bigelow & Dowse Co.:
Paragon, No. 1, $3.50; No. 2, $4.50; No. 3, $5.50 ₩ doz.
Chicago Spring Butt Co.:
Friction ..... 35@35&10%
Oscillating ..... 35@35&10%
Big Twin ..... 35@35&10%
Chisholm & Moore Mfg. Co.:
Advance 55%
Cleveland 60%
Baggage Car Door 50%
Elevator 40%
Railroad 55%
Lane Bros.:
Parlor, Standard ..... 40&5&2½%
Barn Door, Standard ..... 60&2½%
Covered ..... 50&10&10%
Cycle, ₩ doz. $12.00 ..... 33⅓&5%
No. 50 ..... 60&5%
Parlor Door, New Model ..... 40&2½%
Lawrence Bros.:
Crown ..... 60&10%
New York ..... 60&10@60&10&5%
Sterling ..... 60&10%
McKinney Mfg. Co.:
No. 2, Standard, $18 ..... 60&10%
No. 1, Special, $13 ..... 60&10%
E. C. Stearns & Co.:
Davis Parlor Door ..... 50@50&5%
Gem Parlor Sliding Door ..... 50&10%
Challenge ..... 50@50&5%
Steel Single Track Parlor, $6 ..... 50%
Royal Parlor Door 50%
Warner's Pat ..... 20&10&10%
Warner's Imp'd Single ..... 40&10%
Stowell Mfg. and Foundry Co.:
Badger ..... 60&10%
Baggage Car Door 33⅓%
Climax Anti-Friction ..... 55&5%
Elevator 40%
Interstate ..... 60&15%
Magic ..... 50&10%
Matchless ..... 60&10%
Nansen ..... 60&10%
Parlor Door ..... 50&10%
Railroad ..... 55&5%
Street Car Door ..... 50&10%
Steel, Nos. 300, 400, 500 ..... 45&15%
Wild West ..... 50&5%
Zenith for Wood Track ..... 55&5%
Taylor & Boggis Foundry Co.:
Kidder's ..... 50@50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless ..... 33⅓&10%
Wilcox Mfg. Co.:
Aurora Steel Endless 60%
Bike Roller Bearing ..... 60&10&10%
Bike Steel Endless ..... 60&10&10%
C. J. Roller Bearing ..... 60&10&10%
Cycle Ball Bearing ..... 50&10%
Dye Steel ..... 60&10%
Economical Single Track ..... 50&10&5%
L. T. Roller Bearing 70%
New Era ..... 50&10%
New Richards 60%
O. K. Roller Bearing 70%
Prindle Improved ..... 60&10%
Richards' Improved ..... 60&10%
Richards' Single Track ..... 50&10%
Wilcox Dwarf Roller Bearing ..... 40&10%
Wilcox-Ives ..... 60&10%
Wilcox Tandem Roller Bearing ..... 60&10%
Wilcox Trolley Ball Bearing ..... 40&10%
Wilcox Trolley Roller Bearing 50%
Wilcox Trolley Roller Bearing, Fire ..... 40&10%
Wood Track 60%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp, ₩ doz. $1.10 ..... 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands ..... 40&12½@50&5%
Cheaper Brands ..... 50&10@60&5%
Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind Hinges—
Lull & Porter:

No	1	1¼	2	2½
Doz. pair	$0 47	.53	.10	.35

1868 Old Pattern:

No	1	3	5
Doz. pair	$0.55	1.00	2.00

Parker ..... 75&10@75&10&5%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Reading's Gravity ..... 75&10%
Sargent's, Nos. 1, 3, 5, 11, 13 ..... 75@75&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter 75%
Buffalo Gravity Locking, Nos. 1, 3 and 5 ..... 75%
Champion Gravity Locking, No. 75 ..... 80%
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75&10%
Tip Pattern, Nos. 1, 3 and 5 ..... 75&10%
Double Locking, Nos. 20 and 25 ..... 70&10%
Empire, Nos. 101 and 103 ..... 70%
Niagara Gravity Locking, Nos. 1, 3 and 5 ..... 75&15&5%
Noiseless, Nos. 50, 60, 65 and 55 ..... 75&5%
O. S. Lull & Porter ..... 75&5%
Pioneer, Nos. 060, 45 and 5½ ..... 75&5%
Steamboat Gravity Locking, No. 10 ..... 80%
Stanley's Steel Gravity Blind Hinges, ₩ doz. sets $1.30 ..... 40&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No	1	2	3
Hinges with Latches	$1.50	1.75	2.25
Hinges only	0.92	1.50	2.10
Latches only	0.46	.46	.80

New England:
With Latch ..... *doz. $1.45@1 50*
Without Latch ..... *doz. $1.30@1.35*
Reversible Self-Closing:
With Latch ..... *doz. $1.70@1.75*
Without Latch ..... *doz. $1.30@1.35*
Western:
With Latch ..... *doz. $1.75@1.80*
Without Latch ..... *$0.75@$0 78*

Spring Hinges—
Holdback, Cast Iron ..... *gro. $6.50@6.75*
Non-Holdback, Cast Iron ..... *gro. $5.50@$5.75*
J. Bardsley:
Bardsley's Patent Checking 15%
Bommer Bros.:
Bommer's 40%
Chicago Spring Butt Co.:
Chicago 30%
Garden City Engine House 30%
Keene's Saloon Door 30%
Lawson Mfg. Co.:
Matchless 25%
Matchless Pivot 40%
Payson Mfg. Co.:
Oblique, Dbl. Acting ..... 50@50&5%
E. C. Stearns & Co.:
Nos. 45 and 51 ..... 70%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₩ gr. $12.50
Ideal, No. 4 ..... ₩ gr. $9.00
New Idea No. 1 ..... ₩ gr. $9.00
New Idea, Double Acting 45%
Van Wagoner & Williams Hdw. Co.:
Acme ..... 30&5%
American 30%
Columbia, No. 14 ..... ₩ gr. $8.00
Columbia, No. 18 ..... ₩ gr. $24.00
Crown 30%
Gem 30%
Knoxall ..... ₩ gr. $9.00
Oxford 30%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges 70%
Heavy Strap Hinges ..... 70&10%
Light T Hinges ..... 60&5%
Heavy T Hinges ..... 66⅔&5%
Extra Heavy T Hinges 70%
Extra 20@25
Note.—Change in base discounts.
Rolled Plate ..... 70@70&10%
Screw Hook and Strap. { *6 to 12 in.* ..lb 3¼@3½c; *14 to 20 in.* ..lb 3 @3¼c; *22 to 36 in.* ..lb. 2.75@3 c

Hoes—
Eye—
Scovil and Oval Pattern ..... 60@60&10%
Grub, list Feb. 23, 1899 ..... 70&10@75%
D. & H. Scovil ..... 35@35&5%

Handled—
1895 or Old List:
Cotton, Field, Planters', &c ..... 60&10@60&10&5%
1898 or High List:
Field and Garden ..... 60&10&5&2%
Ladies', Boys', Toy and Onion ..... 75&12½&2%
Street and Mortar ..... 75&15&2%
Cotton ..... 75&10&2½&2%
Planters' ..... 75&16⅔&2%
Weeding ..... 75&10&5&2%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe ..... 75&10&2%
Ft. Madison Crescent Cultivator Hoe, per doz $3.75
Ft. Madison Mattock Hoe, ₩ doz $4.00
Ft. Madison Sprouting Hoe, ₩ doz. $4.50
Ft. Madison Dixie Tobacco Hoe ..... 75&16⅔&2%
Kretsinger's Cut Easy, per doz $4.50
Warren Hoe ..... 60&10%

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders—
Bit—
Angular, ₩ doz. $24.00 ..... 45&10%

File and Tool—
Nicholson File Holders and File Handles ..... 33⅓&5%

Hooks—
Cast Iron—
Bird Cage, Reading ..... } 66⅔@70%
Bird Cage, Sargent's List ..... }
Clothes Line, Sargent's List ..... 50@50&5%
Ceiling, Sargent's List ..... 50@50&5%
Clothes Line, Stowell's ..... 70&5%
Clothes Line, Reading List ..... 65&10@65&10&10%
Coat and Hat, Stowell's ..... 70&5%
Coat and Hat, Reading ..... 70@75%
Coat and Hat, Sargent's List ..... 50&10%
Coat and Hat, Wrightsville ..... 65&10%
Harness, Reading List ..... 70&10@75%

Wire—
Belt ..... *80&10@80&20%*
Atlas, Coat and Hat ..... 50@50&10%
Wire Coat and Hat:
Acme ..... 60@60&5%
B. B. ..... 70@70&5%
Gem 66⅔%
Bright Wire Goods—See *Wire.*

Wrought Iron—
Box, or Case, Octagon Steel ..... *doz. $2.00@2.15*
Cotton ..... *doz. $1.00@1.10*
Picture, T. & S. Mfg. Co 75%
Tassel, T. & S. Mfg. Co ..... 50&10%
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—
Bush, Light, doz. $5.00; Medium, $5 50; Heavy, $6.00

Grass	*Nos.*	1	2	3	4
	Best	$1.60	1.75	2.00	
	Common	$1.50	1.50	1.50	1.75

Potato and Manure ..... *75&15%*

Whiffletree ..... *lb. 4¼c*
Hooks and Eyes:
Brass ..... 70&10@75%
Malleable Iron ..... 75&10%
Covert Saddlery Works' Self Locking Gate and Door Hook, 4 in. ₩ gross $13.00; 6 in. $17.20 ..... 70%
Crown Picture 60%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition ..... *ft.* 4¾@ 5½c
3-ply Standard ..... *ft.* 5½@ 6 c
4-ply Standard ..... *ft.* 6½@ 6¾c
3-ply extra ..... *ft.* 6½@ 7½c
4-ply extra ..... *ft.* 7½@ 8½c
High Grade ..... *ft.* 9 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade ..... *ft.* 5½@6c
Fair quality ..... *ft.* 7 c
Good quality ..... *ft.* 8 @ 8½c

Irons—Sad—
From 4 to 10 ..... *lb* 2½@2¾c
B B. Sad Irons ..... *lb.* 2¾c
Chinese Laundry ..... *lb.* 4¼@4½c
Chinese Sad ..... *lb.* 3¼@3½c
Mrs. Potts', per set:

Nos.	50	55	60	65
	70@77c	65@72c	76@81c	70@76c

New England Pressing ..... *lb. 3c*

Soldering—
Soldering Coppers ..... *lb. 23@26c*
Covert Mfg. Co ..... 80&2%

Pinking—
Pinking Irons ..... *doz. 50@60c*

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel ..... 45&2%
Daisy, ₩ doz. $12.00 ..... 70%
Lockport ..... 40@40&10%
Victor, ₩ doz. $20.00 ..... 70%
Lane's Steel 33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 10, '99 ..... 15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Dick's Butcher Knives 40%
Foster Bros.' Butcher, &c 40%
Nichols' Butcher Knives 50%
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.
Hay and Straw—See *Hay Knives.*

Corn—
Ft. Madison Cut-Easy, ₩ doz $3.25

Drawing—
Standard List ..... 75&5@75&10%
Adjustable Handle ..... 25@33⅓%
Bradley's 35%
Swan's ..... 75@75&5&2½%
Watrous ..... 30&10@40%
L. & I. J. White ..... 20&5@25%
Cautelo's Folding ..... 50@50&5%

Hay and Straw—
Blizzard, from Jobbers ..... $5.75@6.00
Iwan's Sickle Edge ..... ₩ doz. $10.50
Lightning, from Jobbers ..... $6.50@7.00

Mincing—
Buffalo ..... ₩ gro. $15.00
Smith's, ₩ doz., Single, $2; Double, $3 ..... 45@50%

Miscellaneous—
Farriers' ..... *doz. $2 00@3.00*
Wostenholme's ..... ₩ doz. $3.00@3.25

Knobs—
Base, 2¼-inch, Birch, Rubber tip, gro ..... *$1.20@1.25*
Carriage, Jap, all sizes ..... *gro. $7@50c*
Door, Mineral ..... *doz. 62@65c*
Door, For. Jap'd ..... *doz. 75@78c*
Door. For. Nickel ..... *doz. $1 70@1.80*
Bardsley's Wood Door, Shutter, &c 15%
Picture, Sargent's ..... 70&10%
Snow's Victor ..... 50&10%

Ladles—Melting—
P., S. & W ..... 35&10@40%
Reading ..... 50&10%
Sargent's ..... 60@60&10%

Lanterns—Tubular—

	Doz.	
Regular Tubular	$8.00	} 40&5@ 40&10&5%
Side Lift Tubular	$8.50	
Square Lift Tubular	$8.50	

Meyrose Side Lift Tubular, doz. $8.50 ..... 50&10&5%

Bull's Eye Police—
2¾-inch flash light ..... *doz. $3.50@3.75*
3-inch flash light ..... *doz. $4.00@4.25*
2¾-inch regular ..... *doz. $3.25@3.50*
3-inch regular ..... *doz. $3.50@3.75*

Latches, Thumb—
Roggin's Latches ..... *doz. 28c@30c*

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Small ..... *doz. 45c; large, 50c*
Covert Mfg. Co ..... 45&2%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
3 x 4 ft. x ¼.....₱ 100 $10.00
Other sizes, Iron.....70&10%
Other sizes, Brass.....70&10%
Excelsior.....60@60&10%
Payson's:
Solid Grip Nos. 303 and 304, ₱ 100, $11.00
Other sizes.....70&10%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	*$2.50*	*2 25*	*2 00*
75 feet			*$1.50*

Ossawan Mills.
Crown Solid Braided Chalk.....33⅓%
Mason's, No. 0 to No. 5.....33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gr.....30%

Locks, &c.— Cabinet—

Cabinet Locks.....33⅓@40%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]
Reading.....60@60&10%
R. & E. Mfg. Co.....50&10@60&5%
Sargent & Co.....30@60&10%
S. B. & Co., Locks, Knobs, &c.40@40&5%
Snow's Victor.....50&10%

Elevator—

Stowell's.....33⅓%

Padlocks—

Wrought Iron, list Dec 3, '97.....
70&5@70&10&5%
Dog Collar, S. B. Co.....40%
R. & E. Mfg. Co. Wrt. Steel and Brass.50%
S. B. & Co.....40%

Sash, &c.—

Fitch's Patent.....65&10%
Ives' Patent.....62½&10@66⅔&10%
Payson's Perfect.....70%
Payson's Signal (new list).....75&10%
Reading.....60&10&10@70%

Machines—

Boring—

	Without Augers. Upright.	Angular.
Douglas	$2.50	$3.00
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Fluting—

Crown Jewel, 6 in.....$2.50@2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.20%

Washing—

Wayne American, ₱ doz. $27.00
Western Star, No. 2, ₱ doz. 28.00
Western Star, No. 3, ₱ doz. 30.00
St. Louis, No. 41, ₱ doz. 60.00
Carload lots 10% off, f.o.b. factory.

Mallets—

Hickory.....50@50&10%
Lignumvitæ.....50@50&10%
Tinners', Hickory and Applewood, doz.....60@55c
Fiber Head, Stearns'.....25%

Mattocks—

List Feb. 23, 1899...60&10@60&10&10%

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, list Jan. 1, '88.....
60&10@60&10&10%
Net prices are often made on some goods which are lower than above discounts.
Enterprise Mfg. Co., list Jan. 17, '93..30%
National, list Jan. 1, '94.....30%
Parker's Columbia and Victor....60&10%
Parker's Upright.....30&10@40%
Swift, Lane Bros.....30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

	10	*12*	*14*	*16-inch*
Cheap	*$1.50@$1.60, all sizes.*			
Good	*2.50*	*2.75*	*3 00*	*3.25*
High Grade	*3.50*	*3.75*	*4.00*	*4.25*

Pennsylvania and Continental.....
60&10&10%

Philadelphia:
All Styles except A and E.....70&10%
Style A, all Steel.....60&10%
Style E, Low Wheel.....60&10%
Style E, High Wheel.....60&10%
Racine.....60&10&10%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899.....
80&10@80&10&5%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10
A. C.	25¢	23¢	22¢	21¢	21¢

40&10&5%

American	9½	9½	9½	9½	9½...net
Ausable	28¢	26¢	25¢	24¢	23¢

40&10&10%

Capewell	19¢	18¢	17¢	16¢	16¢10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢...40%
Champlain	28¢	26¢	25¢	24¢	23¢

40&5&2%

Clinton Fin.	19¢	17¢	16¢	15¢	14¢30&5%
Maud S.	25¢	23¢	22¢	21¢	21¢

50&10&5%

Neponset	23¢	21¢	20¢	19¢	18¢...40%
Putnam	23¢	21¢	20¢	19¢	18¢.33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢...25%

Picture—

	1½	2	2½	3	3½ in.
Brass Head.	*.90*	*.95*	*1.00*	*1.05*	*1.10 gro.*
Por. Head...	*.85*	*.90*	*.95*	*1.10*	*1.15 gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Feb. 1, 1899.

List Feb. 1, '99.

Cold Punched.	*Off*
Mfrs. or U. S. Standard list.	
Hexagon, plain	*.4.80@5.00c*
Square, plain	*.4.80@5.00c*
Square, C. T. & R.	*.4.60@4.80c*
Hexagon, C. T. & R.	*.5.10@5.30c*
Hot Pressed:	
Mfrs.. U. S. or Nar. Gauge Stan'd.	
Square	*.5 00@5.20c*
Hexagon	*.5 40@5 60c*

Oakum—

Best or Government.....*lb. 5¾c*
Navy.....*lb. 4¾c*
U. S. Navy.....*lb. 5¼c*
Plumbers' Spun Navy.....*2¾c*
In carload lots ¼c lb. off f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....50&10@60%
Tin or Steel.....70@70&10%
Zinc.....70@70&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz.20%
Malleable, Hammers' Old Pattern, same list.....50&10%
Wilmot & Hobbs Mfg. Co.....70@75%

Openers, Can—

French.....*doz 35c*
Iron Handle.....*doz 60@75c*
National, ₱ gro.....$1.75@$2.00
Sardine Scissors.....₱ doz. $2.00@$2.10
Sprague, Iron or Wood Handles.....
₱ doz. 40@45¢
Stowell's.....75&10%

Packing—

Rubber—

Standard, fair quality....70&10@75%
Inferior quality.....75&10@80%
Extra.....60&5@60&10&5%
Jenkins' Standard, ₱ lb 80¢....25@25&5%

Miscellaneous—

American Packing.....*9@10c lb.*
Cotton Packing.....*13@15c lb.*
Italian Packing.....*10½@11¼c lb.*
Jute.....*5@5¼c lb.*
Russia Packing.....*12@13c lb.*

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $7.00 ₱ doz.....

Galvanized—

Inch.....	*10*	*12*	*14*
Water, Standard, gro	*$21 00*	*$23 00*	*$25.00*
Water, Competition, gro	*20 00*	*22.00*	*24.00*
Fire, Rd. Bottom, gro	*28.00*	*31.00*	*33.00*
Well, gro	*29.00*	*31.00*	*34 00*

Pans—

Dripping—

Large Sizes.....*lb. 4¾c*
Small Sizes.....*lb. 5¼c*

Fry—

Standard List.....80@80&10%

Roasting and Baking—

Reed, S. S. & Co., ₱ doz., Nos. 5, $4.25; 10, $4.75; 20 $5.25; 30, $5.75
Simplex, ₱ doz., No. 40, $29.50; 50, $33.00; 60, $36 00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 sq. ft. to lb	*$0 35@0 40*
Medium wt., 12 sq. ft. to lb	*$0.55@0.60*
Heavy wt., extra quality	*$0.95@1.05*
Barrett's Water Proof Sheathing	*$1 35@1.75*
Medium Grades Water Proof Sheathing	*$0 80@1.25*
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$40.00@41.00*

Tarred Paper.

1 ply (roll 300 sq ft), ton $35 00@37.00
2 ply, heavy, roll 100 sq. ft.....90c
2 ply, light, roll 100 sq. ft.....75c
3 ply, heavy, roll 100 sq. ft.....$1 20
3 ply, light, roll 100 sq. ft.....$1.00

Sand and Emery—

List April 19, 1886...50&10&5@60&5%

Parers—

Apple—

Advance	₱ doz.	$4.50
Baldwin	₱ doz.	$5.00
Bonanza	each	$5.00
Dandy	each	$7.50
Eureka, 1898	each	$16.00
Family Bay State	₱ doz.	$12.00
Hudson's Rocking Table	₱ doz.	$4.00
Hudson's Rocking Table	₱ doz	$5.50
Improved Bay State	₱ doz.	$27.00@30.00
New Lightning	₱ doz.	$5.50
Reading 72	₱ doz.	$4.00
Reading 78	₱ doz.	$7.00
Turn Table	₱ doz.	$4.50
Turn Table '98	₱ doz.	$5 50
White Mountain	₱ doz.	$4.00

Potato—

Saratoga	₱ doz.	$5.50
White Mountain	₱ doz.	$4.50

Paris Green—

Arsenic, kegs or casks..lb. 12 @12½c
Kegs of 100 to 175 pounds.....lb. 12½@13 c
Kits of 14, 28 and 56 pounds.....lb. 13½@14 c
Paper boxes 2 to 5 pnds..lb. 15½@ 14c
Paper boxes 1 pound...lb. 14 @14½c
Paper boxes ½ pound..lb. 15 @15½c
Paper box ¼ pound..lb 16 @16½c
Note.—These prices are sometimes shaded by jobbers.

Picks and Mattocks—

List Feb 23, 1899...60&10@60&10&10%

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass.....60@60&5%
Iron, list Nov. 11, '85.....60@60&5%

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in.....60%
Extra Heavy, 2 6 in.....65%
Fittings.....60&10&10@70%

Pipe, Wrought Iron—

Factory Shipments.
List February, 1899.
Plain and Galvanized:
Carload lots.....50&10&10&5%
Less than carload lots...50&10&10%
Screw and Socket Casing.....40%
Inserted Joint Casing.....35%
Cold Drawn Seamless Steel Tubing..60%

Planes and Plane Irons—

Wood Planes—

Molding.....40&2½@40&5%
Bench, First quality.....45&10@45&10&5%
Bench, Second quality.....50&10@50&10&5%
Bailey's (Stanley R. & L. Co)
50&10&10@50&10&10&10%
Gage Self Setting.....35%

Iron Planes—

Bailey's (Stanley R. & L. Co)
50&10&10@50&10&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10&10@25&10&10&10%
Sargent's.....60&10&10@70%

Plane Irons—

Standard List.....30&5@30&10%
Buck Bros.....30%
Butcher's.....$5.00@5.25 to 2
Stanley R. & L. Co...50&10@50&10&10%
L. & I. J. White.....20&5@25%

Plates—

Felloe.....*lb. 3½@3¾c*
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

Pliers and Nippers—

Gas....	*7*	*8*	*9*	*10-in.*
Best		*$5.25*	*$6.00*	*$6 50 doz.*
Good	*$2.50*	*2.75*	*3.00*	*3.50 doz.*

Acme Nippers.....50%

Bernard's:
Parallel Pliers, &c.....33⅓%
Paragon Pliers.....50%
Lodi Pliers.....50%
Elm City Fence Pliers.....33⅓%
Button's.....65@70%
Heller's Farriers' Pincers and Tools.....40@40&5%
Morrill's Parallel, ₱ doz. $12.00...30@5%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 5%.....10%
Utica Drop Forge & Tool Co.:
Combination Pliers.....40&5%
Side Cutting Pliers.....40&5%
Hall Patent Nipper.....40&5%
Round and Flat Nose Pliers.....40&5%
End Cutting Pliers.....40&5%
Royal Blue.....40&5%
Glass Pliers.....40&5%
Burner Pliers.....40&5%

Plumbs and Levels—

Plumbs and Levels.....
70¢10¢10@75¢10¢10%
Disston's.....70%
Pocket Levels.....73&10&10@75&10%
Stanley R. & L. Co.....
70&10&10@70&10&10&10%
Stanley's Duplex.....25&10@25&10&10%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $3.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Claziers'—

Bulk and 1 lb. papers.. lb. 10½@11¼c
½-lb. papers.....lb. 11 @12 c
¼-lb. papers.....lb. 11½@12½c

Pokes, Animal—

Ft. Madison Hawkeye.....₱ doz. $3.00
Ft. Madison, Western.....₱ doz. $3.50

Police Goods—

Manufacturers' Lists.....25@25&10%
Tower's.....25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72.....40%
Prestoline Paste.....33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₱ doz. $1.50

Stove—

Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Wynn's Black Silk, 5 lb pail.....₱ lb 12¢
Wynn's Black Silk, ½ lb box, ₱ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₱ doz.$0.75
Wynn's Black Silk, 8 oz. liq., ₱ doz.$1.00

Poppers, Corn—

Round or Square:
1 qt......*gro. $6.50@$7.00*
1½ qt......*gro. 8 00@ 8.50*
2 qt......*gro. 10.00@ 10.50*
Quincy Corn Popper, 1 qt., ₱ gr. $18.00; 2 qt., $24.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled.....*40¢10¢5@50%*
Tinned.....*40¢5@40¢10%*

Powder—

In Canisters:
Duck, 1 lb. each.....*15c*
Fine Sporting, 1 lb. each.....*75c*
Rifle, ½-lb. each.....*15c*
Rifle, 1-lb. each.....*25c*
In Kegs:
Duck, 6½-lb. kegs.....*$2.25*
Duck, 12½-lb. kegs.....*$4.25*
Duck, 25-lb kegs.....*$8.00*
Rifle, 6¼-lb kegs.....*$1.25*
Rifle, 12½-lb. kegs.....*$2.25*
Rifle, 25-lb. kegs.....*$4.00*
King's Smokeless:
Keg (25 lb bulk).....$20 00
Half Keg (12½ lb bulk).....$10.25
Quarter Keg (6¼ lb bulk).....$5.25
Canister (1 lb bulk).....$0.90
Case, 1 lb Canisters (50 lb bulk).....$45.00
Half Case, 1 lb Canisters (25 lb bulk).....$22.75
25&10&2%
King's Semi-Smokeless:
Keg (25 lb bulk).....$16.00
Half Keg (12½ lb bulk).....$8.25
Quarter Keg (6¼ lb bulk).....$2.75
One Pound Can, bulk.....$0.50
20&2%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₱ doz. $18.00.....50%
Crown Prince, ₱ doz. $15.00.....50%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%
National, ₱ doz. $24.00.....40%
Pelican, ₱ doz. $9.00.....15&10%
Scranton No. 1 and 2, ₱ doz.....$9.00
Scranton, No. 3, ₱ doz.....$8.50

Pulleys—

Hay Fork, Swivel or Solid Eye ..... doz. $1.50

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00 ..... 40%
Hay Fork, Stearns' No. 15 & 25 ₱ doz. $1.75
Hay Fork, Stearns' No. 35 & 45 ₱ doz. $2.00
Hay Fork, Stearns' Nos. 56 & 66. $2.25
Hot House, Awning, &c. ..... 60&60&10%
Japanned Clothes Line ..... 60@60&10%
Japanned Screw ..... 70&10&10%
Japanned Side ..... 70&10&10%
Stowell's Ceiling or End, Anti-Friction 40%
Stowell's Dumb Waiter, Anti-Friction 50%
Stowell's Electric Light ..... 33⅓&5%
Stowell's Side, Anti-Friction 50%
Sash (Auger Mortise):
Common Sense, 1¾ in., ₱ doz., 18¢; 2 in., 20¢.
Empire ..... 1¾ in., 17¢; 2 in., 19¢
L. C. ..... 1¾ in., 15¢; 2 in., 17¢
Ideal No. 13 ..... 1¾ in., ₱ doz., 18¢
Improved ..... 1¾ in., 17¢; 2 in., 19¢
Niagara ..... 1¾ in., 16¢; 2 in., 19¢
No. 26, Troy ..... 1¾ in., 15¢; 2 in., 19¢
Star ..... 1¾ in., 16¢; 2 in., 19¢
Acme ..... 1¾ in., 18¢; 2 in., 20¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern ..... 60&5%
Pitcher Spout 75%
Pump Leathers, all sizes....gro. $6.00
Flint & Walling's Fast Mail ..... 50&5%
Flint & Walling's Tower Spout 75%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co 20%

Punches—

Revolving ..... doz. $3.50@3.75
Saddlers' or Drive, good..doz 60@65c
Spring, good quality ..... $1.70@1 80
Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co.'s Check 55%
Bemis & Call Co.'s Spring ..... 50&5%
Bemis & Call Co.'s Springfield Socket. 65%
Niagara Hollow Punches 45%
Niagara Solid Punches 55%
Spring, Leach's Pat 15%
Steel Screw, B. & K. Mfg. Co 50%
Tinners' Hollow, P., S. & W. Co.... 30&2%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44 ..... 55%

Rail—

Barn Door, &c.—

Barn Door, Light..In.	¼	⅝	¾
100 feet	$1.50	$1.95	$2.60

B. D., for N. E. Hangers:

	Small	*Med.*	*Large.*
100 feet	$1.60	2.00	2.50

Sliding Door, Bronzed Wr't Iron, ft. 6¼¢
Sliding Door, Iron Painted..2¼@2½c
Sliding Door, Wrought Brass, 1¼ in. ..... lb. 36c..30%
Cronk's Double Braced Steel Rail, ₱ foot ..... 3¼¢
Lanes' O. N. T., ₱ 100 ft., 1 inch... $3.00
Lanes' Standard, ₱ 100 ft. 4.25
McKinney's None Better ..... ₱ ft. 2¾¢
McKinney's Standard ..... ₱ ft. 3¼¢
Moore's, Wr't. Bracket, Steel ..... 3¼¢
Stowell's Steel Rail ..... 35&10%
Terry's Steel Rail ..... ₱ ft. 3¼¢

Rakes—

1895 or old list often used:
C. S Rakes ..... 60¢10¢3%
Malleable Rakes ..... 70¢10¢3%
Association List:
Cast Steel ..... 75¢5¢2%
Malleable ..... 70¢10%
Fort Madison Red Head Lawn..... $3.00
Fort Madison Blue Head Lawn..... $2.65

Rasps, Horse—

Disston's 75%
Heller Bros. ..... 60&10& 0%
New Nicholson Horse Rasp..... 70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes 25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor. 50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN..... 40&10%

Registers—

For points on Mississippi River and East:
Black Japanned 40%
White Japanned 30%
Bronzed Finishes 40%
Nickel Plated 40%
Electro Plated in Brass, &c..... 40%
White Porcelain 30%
Solid Brass and Bronze Metal.. 25%
Note.—Higher prices are quoted in territory further West.

Rings and Ringers—

Bull Rings—

	2	*2¼*	*3 Inch.*
Steel	$0.90	1.00	1.05 *doz.*
Copper	1.10	1.20	1.35 *doz.*

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $3.75@4.00
Hill's Ringers, G. I. ..... doz. 50@55c
Blair's Rings ..... ₱ gro. $4.25@4.50
Blair's Ringers ..... ₱ doz. 55¢@60¢
Brown's Rings ..... ₱ gro. $4.25@4.50
Brown's Ringers ..... ₱ doz. 55¢@60¢
Perfect Rings ..... ₱ gro. $7.25@7.75
Perfect Ringers, ₱ doz ..... 75@80¢

Rivets and Burrs—

Copper ..... 40¢10@.50%
Iron or Steel:
Tinners' ..... 60@60¢10%
Miscellaneous ..... 60@60¢10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction .... 50&10%
Barn Door, Sargent's list. 60&10&10@70%
Lane's, Stay ..... 33⅓&5%
Stowell's Barn Door Stay... ₱ doz. $1.00

Rope—

Manila, 7-16 in. and larger. lb. 9¾@10 c
Manila ..... ¾-inch lb. 10¼@10½c
Manila..¼ and 5-16 in. lb. 10¾@11 c
Manila, Tarred Rope, 15 thread ..... lb. 9¾@10 c
Manila Hay Rope Med'm. lb 9¾@10 c
Sisal, 7-16 in. and larger, lb. 8 @ 8¼c
Sisal ..... ⅜-inch. lb 8½@ 8¾c
Sisal ..... ¼ and 5-16 in. lb. 9 @ 9¼c
Sisal, Hay Rope, 2 to 10 ply ..... lb. 8 @ 8¼c
Sisal, Med'm Lath Yarn. lb. 7½@ 7¾c
Cotton Rope:
Best, ¼-in. and larger..lb. 13@14 c
Med'm, ¼-in. and larger lb. 10@12 c
Com., ¼-in. and larger, lb. 8@10 c
Jute Rope ..... lb. .. @6 c

Wire Rope—

List July 1, '99 ..... 30¢2½%

Ropes, Hammock

Covert Saddlery Works 70%

Rules—

Boxwood..75¢10¢10¢10@75¢10¢10 ¢10¢10¢10%
Ivory ...40¢10¢10@40¢10¢10¢10¢10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Stanley R. & L. Co.;
Boxwood ..... 75&10&10@75&10&10&10%
Ivory ..... 40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Note.—Extra 5@10% often given on Circulars Cross Cuts, &c. and extra 5@7½ on Hand, Butcher, &c.

Atkins' Circular 50%
Atkins' Band 50%
Atkins' Cross Cuts 40%
Atkins' Mulay, Mill and Drag 50%
Atkins' One-Man Saw ..... 40&10%
Atkins' Wood Saws ..... 40&10%
Atkins' Hand, Compass, &c. 40%
Disston Circular Solid and Inserted Tooth 50%
Disston Band 2 to 14 in. wide 60%
Disston Band ¼ to 1¾ 70%
Disston Crosscuts 50%
Disston Narrow Crosscuts 55%
Disston Mulay, Mill and Drag 50%
Disston Framed Woodsaws 35%
Disston Woodsaw Blades 40%
Disston Woodsaw Rods 25%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Disston Hand Saws, Nos 7, 107, 10, 3, 1, 0, 00, Combination 30%
Disston Compass, Keyhole, &c. 25%
Disston Butcher Saws and Blades 35%
C. E. Jennings & Co.'s ..... 25&5@30&5%
Peace Circular and Mill ..... 45&10%
Peace Cross Cuts, list Jan. 1, '99, 45&10&5%
Peace Hand, Panel and Rip ..... 25&10&5%
Richardson's Circular and Mill ..... 45&10%
Richardson's X Cuts, list Jan. 1, '93, 45&10&5%
Richardson's Hand, &c. ..... 25&10&5%
Simonds' Circular Saws 50%
Simonds' Crescent Ground Cross Cut Saws 35%
Simonds' One-Man Cross Cuts ..... 40&10%
Simonds' Gang Mill, Mulay and Drag Saws ..... 45@45&5%

Hack Saws—

Disston Concave Blades 25%
Disston Keystone 30%
Disston Hack Saw Frames 30%
Griffin's complete ..... 50@50&10%
Griffin's Hack Saw Blades .... 50@50&1 %
Star Hack Saws and Blades ..... 15&10%

Scroll—

Barnes' No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without border, $18; with border, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete $4.00 ..... 15&10%

Scale Beams—See *Beams, Scale.*

Scales—

Family, Turnbull's ..... 30@30&10%
Hatch, Counter, No. 171, good quality ..... doz. $17.00@18.00
Hatch, Tea, No. 161...doz. $5.75@6.00
Union Platform, Plain ...$2.00@2.10
Union Platform, Striped..$2.15@2 25
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Chatillon's Grocers' Trip Scales 50%
Pelouze Scales—Family, Candy, Grocers' and Postal 33⅓%
"The Standard" Portables ..... 45&50%
"The Standard" R. R. and Wagon. ..60%

Scrapers—

Box, 1 Handle ..... doz $2.00
Box, 2 Handle ... doz. $3.00@4.00
Ship, No 1. doz. $3 50; No 2. $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 40&10%
Ford, W. E. Paint Mfg. Co. ₱ doz. $1.15@$1.25

Screen Window and Door Frames—See *Frames.*

Screw Drivers—See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron ..... doz. 1 in., $2.30; 1¼, $2.65; 1¼, $3.00
Bench, Wood, Beech..doz. $2.00@2.20
Hand, Wood ..... 50¢10@40¢10%
Hand, Grand Rapids 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Jan. 30, '95 ..... 70¢5@70¢5& ...%
Coach and Lag, Gimlet Point, list Jan. 30, '95 ..... 70@70¢ %
Hand Rail, list Jan. 1, '81.... 82½&2%

Jack Screws—

Millers Falls ..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W. ..... 40&40&10%
Sargent ..... 70&10&10%
Stearns' ..... 40&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron 60%
Flat or Round Head, Brass 50%

Set and Cap—

Set (Iron or Steel)..75¢10@75¢10¢5%
Sq. Hd. Cap.. ...70¢10@70¢10¢5%
Hex. Hd. Cap ..... 70¢10@70¢10¢5%

Wood—

List Nov. 10, 1898. Discounts adopted June 28, '99.
Flat Head, Iron 82½%
Round Head, Iron 80%
Flat Head, Brass ..... 77½¢10%
Round Head, Brass ..... 72½¢10%
Flat Head, Bronze 72½%
Round Head, Bronze 70%
Drive Screws 85%
Note.—An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass and Grain ..... 50¢10%

Scythe Snaths—See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise ..... 25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls ..... doz. $2.00
Wood Hdle., 14 Awls, 6 Tools ..... doz. $2.25@2.40
Aiken's Sets, Awls and Tools: No. 20, ₱ doz. $10.00, 60&10@60&10&5%
Fray's Adj. Tool H'dls., Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe ... ₱ doz. $9.00

Nail—

Round, assorted ..... gro. $3 25@3.75
Octagon ..... gro. $4 25@4.75
Knurled, Good ..... gro. $6.00
Buck Brothers 27½%
Cannon's Diamond Point, ₱ gr. $12. 25%
Snell's Corrugated, Cup Pt. 50%
Snell's Knurled, Cup Pt. 66⅔%

Rivet—

Regular list ..... 70¢5@75%

Saw—

Aiken's Genuine ..... ₱ doz. $4.50@5.00
Aiken's Imitation ..... ₱ doz. $3.00@3.10
Atkin's Criterion ..... ₱ doz. $6.00
Atkin's Adjustable ..... ₱ doz. $8.00
Bemis & Call Co.'s Cross Cut ..... 30&5%
Bemis & Call Co.'s Plate 20%
Bemis & Call Spring Hammer ..... 30&5%
Disston's Star and Mona ch 25%
Hammer, Bemis & Call Co.'s new Pat. 45%
Morrill's No. 1, $15.00 ..... 40&20%
Nos. 3 and 4, Cross Cut, $22.00. 40&20%
No. 5, Mill, $31.00 ..... 40&20%
No. 10, $15.50 ..... 40&20%
No. 11, $16.00 ..... 40&20%
Taintor Positive, ₱ doz. $18 ..... 60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40.... 25@33⅓%

Shaves, Spoke—

Iron ..... doz. $1 00@1 25
Wood ..... doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.) ..... 50&10%
Goodell's, ₱ doz. $9.00 ..... 15&10%
Stearns' ..... 40&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best	$16.00	18.00	20.00 gro.
Good	$13 00	15.00	17 00 gro.
Cheap	$9.00	10 00	11.00 gro.

Straight Trimmers, &c.:
Best quality, Jap ..... 70¢5@70¢10%
" Nickel..60¢5@60¢10%
Fair qual. Jap...80¢10@80¢10¢10%
" Nickel ..... 75¢5@75¢10%
Tailors' Shears ..... 40@40¢10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailors' Shears ..... 40@40&5%
National Cutlery Co., Nickel ..... 60&10%
National Cutlery Co., En. Hdls ..... 70&1 %
Seymour's, Jr. ..... 70@70&5%
Seymour's Nickel ..... 60@60&5%
Seymour's Tailors' Shears 40%
Wilkinson's Hedge 50%
Wilkinson's Sheep 15%

Tinners' Snips—

Forged Handles, Steel Blades..20¢10% Malleable Handles, Laid with Steel. 40%
Forged Handles, Steel Blades, Berlin. 40¢10%
Niagara Snips 40%
Seymour's ..... 40@40&5

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00 ..... 25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 ..... 25@25&10%
John T. Henry Mfg. Company's Pruning Shears all grades ..... 50&5%
Orange Shears ..... 50&30%
Grape ..... 50&10%
Tree Pruners 75%
P., S. & W. Co. 60%
Seymour's ..... 60&10&10@70&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Patent Roller ..... 60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7%
Reading ..... 70&10@75%
R. & E. ..... 60&10@60&10&5%
Wrightsville, Hatfield Pattern.... 80&10%

Sliding Shutter—

Reading list ..... 70&10@75%
R. & E. ..... 60@60&10%
Sargent's list ..... 60@60&10%

Shells—

Shells, Empty—

Brass Shot Shells, Club, Rival, Climax, 65&2%
Brass Shot Shells, first quality ..... 60&2%
First quality 4, 8, 10 and 12 gauge, 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list) ..... 20&10&2%
Ideal ..... 33⅓&10&2%
New Victor, all gauges ..... 15&2%
Quick Shot and League ..... 33⅓&5&2%
Smokeless brand, 12, 10, 16 gauge ..... 33⅓&10&2%
Star, Club, Rival and Climax Brands ..... 33⅓&10&2%
Trap brand, 12 and 10 gauge. 33⅓&10&2%
Primrose Club, Blue Rival, Yellow Rival and New Climax ..... 20&5&2%

Shells, Loaded—

Loaded with Black Powder ..... 40¢5@40¢10%
Loaded with Nitro Powder ..... 40¢10¢10¢5@40¢10¢10¢10%
Loaded with Semi-Smokeless Powder ..... 40¢5@40¢10%

Ship Tools—

L. & I. J. White 25%

Shoes, Horse, Mule, &c.—

Factory Shipments:
No. 2 and larger ..... per 100 lbs., $3.35

Shot—

Drop, up to B, 25-lb. bag...$1.35@1.40
Drop, up to B, 5-lb. bag ..... .30
Drop, B and larger, 25-lb. bag .... $1.60@1.65
Drop, B and larger, 5-lb bag..... .35
Buck, 25 lb. bag..... ....$1.60@1.65
Buck, 5-lb. bag ..... .35
Chilled, 25 lb. bag..... $1.60@1.65
Dust Shot, 25 lb. bag 2.00
Dust Shot, 5-lb. bag ..... .50
These prices are often shaded 5@10c. 25 lb. bag, especially in the West, and merchants often undersell the manufacturers.

Shovels and Spades—

Combination prices to small trade are as follows:

No. 2, Polished, Sq. or Rd. or L Handle:	*A1, 1st Grade.*	*B2, 2d Grade.*
Plain Back ...	$3.30	$3 40
Strap Back....	3 70	7 80
Cleveland Pat'n	9.00	8.10

	C3, 3d Grade.	*D4, 4th Grade.*
Plain Back....	$7.50	$6.90
Strap Back....	6.90	6.30
Cleveland Pat'n	7.20	6.60

All other sizes add 30c doz. Black deduct 30c doz.

Note.—A further advance of 60 cents to retailers has been made by manufacturers, and is being put into effect by jobbers generally, but the price is often cut.

Shovels and Tongs—

Brass Head.....60&10@60&10&10%
Iron Head.....60&10@60&10&5%

Sieves and Sifters—

Hunter's Imitation...gro. $9.00@9.50
Buffalo Metallic, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$10.00	$12.00	$13.20

Eclipse.....₱ gr. $9.00@ 9.50
Hunter's Genuine....₱ gr. $10.00@10.50
Shaker (Barler's Pat.) Flour Sifters..
₱ doz., $2.00.....95%

Sieves, Wooden Rim—

Mesh 18, Nested, doz.....$0.75@0 80
Mesh 20, Nested, doz..... .85@ .90
Mesh 24, Nested, doz..... .95@1.00

Sinks—

Cast Iron—

Low list.....65@65&5%

NOTE.—*The low list is now generally used, but some jobbers use high list.*

Wrought Steel—

Columbus Galv'd and Enameled.....
50&10@60%
Columbus, Painted.....30&10@40%
L. & G.....50%

Skeins, Wagon—

Malleable Iron.....70&10@75&10%
Steel.....45@45&5%
I. I. & B. Co. Steel.....45%

Slates—

"*D*" *Slates*.....50&10@50&10&10%
Unexcelled Noiseless Slates.....
60&6 tens@60&6 tens&5%
Wire Bound.....40&10@50%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....50@50&5%
Covert Mfg. Co.:
Derby.....45&2%
High Grade.....45&2%
Jockey.....45&10&2%
Trojan.....45&10&2%
Covert's Saddlery Works:
Banner.....75%
Crown.....70%
Triumph.....70%
W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
National.....50&5%
Clipper.....50&10&5%
Champion.....40&10%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Sw vel.....55&1 @55&10&10%
Sargent's Patent Guarded.....
70&10@70&10&10%

Snaths—

Scythe.....55%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware.....50&10@60&10%
Wm. Rogers M'g. Co.....50&10%

Miscellaneous—

German Silver.....60&10%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55&55&10%
Victor (Coil).....60&10@60&10&5%

Carriage, Wagon, &c.

1½ in. and wider...Blk, Hf Brt. Brt. Tested and Temp 5 5¼ 5½c lb
Oil Tested and Tempered..... 6 6¼ 6½c lb
Cliff's Bolster Springs.....40&2%
Cliff's Seat Springs.....₱ pair 45c

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....35%

Squares—

Nickel plated.... } *List May 1, '95..*
Steel and Iron... } 70&10@75&10%
Rosewood Hdl. Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels.
40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter...50&10%

Squeezers—

Lemon—

Wood, Common, gro., No. 0, $5.00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined:
Cheap.....doz. $2.00@2.75
Good Grade.....doz. $3.00@3.50
Tinned Iron.....doz. $0.80@1.25
Iron, Porcelain Lined doz. $3.25@3 50
Jennings' Star.....₱ doz. $1.85@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind.....lb. 9@9½c
Electricians', Association list.....80%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting.....lb. 5½@6c
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....40%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%
John Wilson's, list Sept. 1, '94.....25%

Steelyards.....40@40&10%

Stocks and Dies—

Blacksmiths'.....35@40%
Gardner.....50%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ lb...8¢
Sand Stone.....5¢ } 33⅓@
Turkey Oil Stone, Extra, 5 to 9 in.....80¢ } 33⅓&10%
Turkey Slips.....$2.00
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5½ in. $2.80
Arkansas Stone, No. 1, 5½ to 8 in. $3.50
} 33⅓@33⅓&10%
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%
Stearns'.....30&5%

Stops, Window—

Ives' Patent.....25&5%
Taplin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal.....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points...doz. 70@75c
Cast Steel, Polished.....*doz. $2.25*
Socket.....*doz. $1.75*

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co., list Jan. 17 '93.....
25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....25%

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90&20@90&25%
American Tinned....90&20@90&25%
American Cut Tacks...90@90&10&5%
Swedes Iron Tacks.....90&10@90&20%
Upholsterers' Tacks..90&35@90&50&5%
Gimp Tacks.....90&35@90&50&5%
Lace Tacks.....85&20@85&30%
Trimmers' Tacks.....90&10@90&20%
Looking Glass Tacks.....70@70&10%
Bill Posters' and Railroad Tack....
90&25@90&25%
Hungarian Nails.....80&5@80&10%
Common and Patent Brads.75@75&5%
Trunk and Clout Nails:
Blued.....80@80&10%
Tinned.....80@80&10%
NOTE.—*Jobbers' prices are often lower than manufacturers'.*

Miscellaneous—

Double Point Tacks.....90&5@...%
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.50
Emerald, S. S. & Co.....60-gal., $4 40
Queen City S. S. & Co., 0-gal.....$3.75
Queen City S. S. & Co., 60 gal.....$4.80

Tapes, Measuring—

American Asses' Skin.....40&10@50%
Patent Leather.....25@25&10%
Steel.....33⅓@40%
Chesterman's.....25@25&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30&5%

Thermometers—

Tin Case.....80&10@80&10&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White.....20@20&5%

Saw—

Atkins' new list.....40%
Simonds'.....33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Newhouse.....50&5@50&10%
Oneida Pattern.....80@80&5%
Genuine Blake, Lamb & Co.....
60&10@60&10&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.8@9c
Mouse, Round or Square Wire.....
doz. $0.85@1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat.....₱ doz. $15.00
No. 3, Rat.....₱ doz. $5.85
No. 3½, Rat.....₱ doz. $4.50
No. 4, Mouse.....₱ doz. $4.30
No. 5, Mouse.....₱ doz. $3.00
Schuyler's Rat Killer, No. 1, ₱ gr. $13.50; No. 2, ₱ gr. $15.00
Out o' Sight, Mouse, No. 1, ₱ doz. 60¢; Rat, No. 2, $1.25; Mouse, $6.00; Gopher, $1.50; Stop Thief, No. 1, $1.25; No. 2, $1.50.

Fly—

Balloon, Globe or Acme.....
doz. $1.25; gro. $14.50@15.00
Harper, Champion or Paragon
doz. $1.50; gro. $17.00

Trimmers, Spoke—

Bonney's No. 1, ₱ doz. $3.00; No. 2, $4.00
Douglas', ₱ doz. $9.00.....20%
Stearns'.....20&10%

Trowels—

Diston Brick and Pointing.....30%
Diston Plastering.....25%
Diston "Standard Brand" and Garden Trowels.....40%
Peace's Plastering.....25@25&5%
Rose Brick and Plastering...30@30&10%
Woodrough&McParlin,Plast'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern
₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galv nized S. S. & Co., with Wringer Attachment, ₱ doz., No. 10, $6.25; No. 20, $6.75; No. 30.....$7 50

Twine—

Miscellaneous—

Flax Twine—	*BC*	*B.*
No. 9, ¼ and ½-lb. Balls	*.20c*	*24c*
No. 12, ¼ and ½-lb Balls	*.17c*	*20c*
No 18, ¼ and ½-lb. Balls	*.14c*	*17c*
No. 24, ¼ and ½-lb. Balls	*.14c*	*17c*
No 36, ¼ and ½-lb. Balls	*.13c*	*16c*

Chalk Line, Cotton, ½-lb. Balls..
18@20c
Cotton Mops, 6, 9, 12 and 15 lb. to doz.....*8@9c*
Cotton Wrapping, 5 Balls to lb.....
9@16c
American 2-Ply Hemp, ¼ and ½-lb. Balls.....*9@10c*
American 3-Ply Hemp, 1-lb. Balls..
9@16c
American 3-Ply Hemp, 1-lb. Balls (Spring Twine).....*10@11c*
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....*8c*
India 3-Ply Hemp, 1-lb. Balls.....*8c*
India 3-Ply Hemp, 1½-lb. Balls....
7@7½c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls.6½c
Mason Line, Linen, ½-lb. Balls...*15c*
No. 264 Mattress, ¼ and ½-lb. Balls 34c
Wool.....*5@5½c*

Vises—

Solid Box.....60@60&5%
Bonney's Saw Vises.....40&10%

Parallel—

Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands'.....40@40&10%
Massey's Perfect.....20@25%
Massey's Clincher.....40@40&10%
Merrill's.....20%
Miller's Falls.....45&10%
Parker's.....20@25%
Parker's Oval Slide.....50&10%
Parker's Victor.....30%
Prentiss.....20@25%
Sargent's.....70&10@70&10&10%
Simpson's Adjustable.....40%
Stephens'.....25@30%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Disston's D 3 Clamp and Guide, ₱ u 2 $30.....25%
Reading.....40&10%
Stearns' Common, Nos. 0, 1, 2 & 3....50%
Stearns' Rubber Jaw, Nos. 10 & 33.33⅓%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....35%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&5%

Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up.....60c	
B. E., 9 and 10.....70c	
B. E., 8.....80c	
B. E., 7.....80c	
P. E., 11 up.....$1.00	
P. E., 9 and 10.....1.25	
P. E., 8.....1.50	
P. E., 7.....1.50	
Ely's B E., 11 and larger..$1.70@1 75	
Ely's P. E., 12 to 20.....$3 00@3.25	

Dis. 50&25%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60@10@65%
Unground.....60@10@10@70%
White Enameled Ware:
Muslin Kettles 75@10@75@10@65%
Boilers and Saucepans...60@60@5%
Tinned Boilers and Saucepans.60@5%
See also *Pots, Glue.*
Note.—See Trade Report.

Enameled—

Agate Ware, list July '99.....40%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality, Agate.....65%
Second Quality, Granite.....
70&10@70&10&10%
Iron Clad:
Tempered Ware, high list.....70%
Princess Ware, special list.....33⅓%
Mottled Ware, high list.....75&15%
Never Break Enameled.....50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each.....	*.40c*	*.45c*	*.50c*	*.60c*

Steel Hollow Ware.

Avery Spiders & Griddles.....70@70&5%
Avery Kettles.....60@60 & 0%
Lava.....50&5%
Never Break Spiders and Griddles.....
70@70&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60@60&10%
Solid Steel Ware, Enameled.....50&5%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10&5%

Washboards—

Solid Zinc:	₱ doz
Crescent, family size, bent frame.	$3.00
Red Star, laundry size, stationary protector.....	$4.25
Double Zinc Surface:	
Saginaw Globe, family size, stationary protector.....	$2.50
Wilson, family size, bent frame...	$2.50
Single Zinc Surface:	
Naiad protector, family size, open back perforated.....	$2.25
Saginaw Globe, protector, family size, ventilated back.....	$2.10
Wilson, bent frame, family size, ventilated back.....	$2 10

Washers—

Leather, Axle—

Solid.....80&10&10@85%
Patent.....85@85&5%
Coil: 3/8 1 1½ 1¼ Inch.
13c 14c 15c 17c per 100

Iron or Steel

Size bolt ... 5-16 3/8 ½ 5/8 ¾
Washers....$5.80 4.90 3.60 3.30 3.10
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.
NOTE Jobbers' prices generally lower than manufacturers'.

Washer Cutters—

See *Cutters, Washer.*

Washing Machines—

See *Machines, Washing.*

Water Coolers—

See *Coolers, Water.*

Weaners—

Tyler's New Era Weaner—No. 1 ₱ doz. $3.45; No. 2, $3.70; No 3, $4.00; No 4 $4.80
Tyler's Saucy—Nos. 1 and 2, ₱ doz. $1.70; No. 3, $2.00; No. 4, $2.30.

Wedges—

Oil Finish.....lb. 2.70@2.85c
Axe Finish.....lb. 3.00@3.10c

Weights, Sash—

Carloads at factory.....$15.00@17.00
Less than carloads at factory.....$16.00@18.00
Note—Some Foundries are naming higher prices.

Well Buckets, Galvanized

See *Pails, Galvanized.*

Wheels Well—

8-in., $1.75; 10-in., $2.00; 12-in., $2.50; 14-in., $3.75.

Wire and Wire Goods—

Market: Nos. 6 to 16:
Br. & Ann .....70&10@75&5%
Cop'd.....67½@70%
Galv .....67½@70%
Tin'd, Tin'd list.. .....75@75&5%
Stone, Br. and Ann'd:
Nos. 19 to 26.....75&10@75&10&5%
Nos. 27 to 36.....75&10&5@80&5%
Annealed Wire on Spools.....60&10@60&10&5%
Brass, list Feb. 26, '96.....15%
Copper, list Feb. 26, '96.....20%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

Iron and Brass, list July 1, 1899....80&10@80&10&10%

Wire Cloth and Netting—

Galvanized Wire Netting.....80@80&15%
Painted Screen Cloth per 100 ft ..$1 50@ ...

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....75&10@80%
Baxter's S.....70%
Coes' Genuine.....40&10&5&5&3%
Coes' "Mechanics'".40&10&10&5&5&3%
Acme .....60@60&5%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....75%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable 4 Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....50%
Boardman's.....33⅓%
Bull Dog, W. & B.....70@70&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70&10@75%
Stevenson.....60&10&10%
Stillson's.....55%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92.....85@85&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed...70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'..20%

Zinc—

Sheet.....lb 7¾c@8c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. .. 7½@ 8¼
Lead, American White, in Oil:
Lots of 500 ℔ or over ..... 5¼@ 5¾
Lots less than 500 ℔..... .. @ 6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... .. @ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1¼
Lead White, Dry in bbls..... .. @ 5
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry..... ₱ ℔ 4½@ 5
Zinc, French S. & B. Red Seal.. .. @ 7½
Zinc, French, S. & B. Green Seal ..@7 7-10
Zinc, Paris, Red Seal..... .. @ 8¾
Zinc, Paris, Green Seal..... .. @ 9¾
Zinc, Antwerp, Red Seal..... .. @ 7¾
Zinc, Antwerp, Green Seal..... .. @ 8¾
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over..... .. @11¾
lots less than 1 ton..... @12¼
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over..... .. @10¼
lots of less than 1 ton..... .. @11¼
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 3%. No discount allowed on less than 10 bbl. lots.

Dry Colors.

Black, Carbon.....₱ ℔ 6 @10
Black, Drop, Amer..... 2½@ 4
Black, Drop, Eng..... 5 @10
Black, Ivory ..... 9 @20
Blue, Celestial.....₱ ℔ 5½@ 8
Blue, Chinese.....31 @36
Blue, Prussian.....28 @32
Blue, Ultramarine..... 7 @35
Brown, Spanish..... ½@ 1
Brown, Vandyke, Amer..... 1¾@ 2½
Brown, Vandyke, Foreign..... 2½@ 3½
Carmine, No. 40, in bulk....$2.20@2.25
Carmine, No. 40, in ℔ bottles. 2.35@ ..
Carmine, No. 40, in ounce bot. 3.50@3.60
Green, Chrome, ordinary ..... 5 @ 6
Green, Chrome, pure.....19 @25
Lead, Red, bbls. and ½ bbls..... .. @ 5¾
Lead, Red, kegs..... .. @ 6
Litharge, bbls. and ½ bbls..... .. @ 5¾
Litharge, kegs..... .. @ 6
Ocher, French Washed ..... 1¼@ 2½
Ocher, German Washed..... 4½@ 5
Ocher, American.... ₱ ton $10.00@15.00
Orange Mineral, English.. ₱ ℔ 8½@ 9½
Orange Mineral, French.....10½@10¾
Orange Mineral, German..... 8½@ 9¼
Orange Mineral, American .... 7¾@ 8
Red, Indian, English..... 4½@ 8½
Red, Indian, American ..... 3 @ 3½
Red, Turkey..... 7½@10
Red, Tuscan..... 7 @10
Red, Venetian, Amer., ₱ 100 ℔ .60 @90
Red, Venetian, English.....$1.05@2.00
Sienna, Italian, Burnt and Powdered.....₱ ℔ 2¾@ 5
Sienna, Ital., Raw, Powd..... 2½@ 5
Sienna, American, Raw..... 1¼@ 1½
Sienna, American, Burnt and Powdered.....₱ ℔ 1¼@ 1½
Talc, French..... ....₱ 100 ℔ $1.10 @1.25
Talc, American..... .50 @65
Terra Alba, French, ₱ 100 ℔ .. 80 @1.00
Terra Alba, English..... .85 @1.00
Terra Alba, American No. 1....65 @75
Terra Alba, American No. 2....50 @60
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2¼@ 3½
Umber, Turkey, Raw & Powd. 2¼@ 3½
Umber, Bnt. Amer..... 1¼@ 1½
Umber, Raw, Amer..... 1¼@ 1½
Yellow, Chrome..... 10 @25
Vermillion, American Lead..... .. @10
Vermilion, Quicksilver, bbls. or kegs..... .. @61
Vermilion, Quicksilver, bags.... .. @62
Vermilion, Quicks'r, sm'r pkgs.. .. @67
Vermilion, English, Import.. .65 @90
Vermilion, Artificial..... 5 @20
Vermilion Chinese..... .80 @90

Colors in Oil.

Black, Lampblack, Best..... 13 @14
Black, Lampblack, Common... 10 @11
Blue, Chinese..... .. 35 @40
Blue, Prussian..... 30 @35
Blue, Ultramarine..... 12 @16
Brown, Vandyke..... 8 @13
Green, Chrome..... 8 @14
Green, Paris..... 20 @24
Sienna, Raw..... .. 8 @13
Sienna, Burnt..... 8 @13
Umber, Raw..... 8 @12
Umber, Burnt..... 8 @12

Miscellaneous.

Barytes, Foreign, ₱ ton....$20.00@21.00
Barytes, Amer. floated..... 19.00@20.00
Barytes, Crude..... 8.00@10.00
Chalk, in bulk.....₱ ton 2.00@ ..
Chalk, in bbls.....₱ 100 ℔ 35@ ..
China Clay, English..₱ ton 11.00@17.00
Cobalt, Oxide.....₱ 100 ℔ ....@ 1.76
Whiting, Common.₱ 100 ℔ .42½@ .50
Whiting, Gilders..... .47@ .56
Whiting, extra Gilders'.... @ 55%

Putty.

In barrels and ½ bbls..... 1 4-10@ 1¼
In tubs.....1¼@1 6-10
In tin cans..... 1¾@ 2
In bladders..... ... 1¾@ 2

Spirits Turpentine.

In Southern bbls.... .. @44½¢
In machine bbls .... .. @45 ¢

Glue.

Low Grade.....₱ ℔ 13 @15
Cabinet.....13 @16
Medium White.....14 @16
Extra White.....16 @25
French.....12 @25
Irish.....13 @15

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....₱ gal. 39 @40
Linseed, City, boiled.....41 @42
Linseed, State and Western, raw 36@37
Linseed, raw Calcutta seed....58 @ ..
Lard, Prime City, present make 43 @45
Lard, Extra No. 1..... ....35 @37
Lard, No. 1..... .....30 @31
Cotton-seed, Crude.....21 @21½
Cotton-seed, Summer Yellow, prime.....26½@27
Cotton-seed Summer Yellow, off grades..... .. ..25½@26
Sperm, Crude.....50 @52
Sperm, Natural Spring.....53 @55
Sperm, Bleached Spring.....58 @60
Sperm, Natural Winter..... .. @57
Sperm, Bleached Winter.....62 @65
Whale, Crude..... .. @ ..
Whale, Natural Winter..... .. @43
Whale, Bleached Winter..... .. @45
Whale, Extra Bleached Win... .. @48
Menhaden, Crude, Sound.....23 @24
Menhaden, Light Pressed.....28 @29
Menhaden, Bleached Winter..... @41
Menhaden, Extra Bleached....34 @ ..
Tallow, Western, prime.....44 @45
Cocoanut, Ceylon..... 5¾@ 6
Cocoanut, Cochin..... 7 @ 7½
Cod, Domestic..... .....33 @35
Cod, Newfoundland.....34 @40
Red Elaine.....28 @30
Red Saponified.....₱ ℔ 4 @ 4¼
Bank.....₱ gal. .. @27
Straits..... .. @28
Olive, Italian, bbls..... 58 @60
Neatsfoot, prime..... .....44 @45
Palm, prime, Lagos.....₱ ℔ 5¼@ 5½

Mineral Oils.

Black, 29 gravity, 25@30 cold test.....₱ gal. .. @ 7½
Black, 29 gravity, 15 cold test. .. @ 8½
Black, summer..... .. @ 7¼
Cylinder, light filtered..... 13¼@15¾
Cylinder, dark filtered..... 11¼@16¾
Paraffine, 23½@24 gravity.... 8¾@ 9
Paraffine, 25 gravity..... .. @ 8¼
Paraffine, 28 gravity..... .. @ 7½
Paraffine, red, No. 1..... .. @ 8¾
In small lots ½¢ advance.

THE IRON AGE.

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BRITISH AGENCY: Office of *The Ironmonger*, 42 Cannon Street, London.
AUSTRALIAN OFFICES: Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Palings Buildings.

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CURRENT METAL PRICES.

AUGUST 2, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₱ lb; Square, 0.8¢ ₱ lb
1 to 1⅞ in. round and square, 1⅛ to 4 in. x ⅜ to 1 in. ₱ lb 2.30@2.40¢
Refined Iron:
1 to 1⅞ in. round and square, 1⅛ to 4 in. x ⅜ to 1 in. ₱ lb 2.40@2.50¢
1⅛ to 4 in. x ¼ to 5-16 ₱ lb 2.60@2.70¢
Rods—⅜ and 11-16 round and sq'e. ₱ lb 2.60¢ @ 2.70¢
Angles:
3 in x ¼ in and larger 2.45¢
1¼ to 2¾ in. x ¼ in and heavier 2.55¢
1 to 3 in. x 3-16 in 2.65¢
1 to 3 in. x 1/16 in 2.75¢
Tees:
1 in 2.85¢
1¼ to 2¾ in 2.65¢
3 in. and larger 2.55¢
Beams 2.75¢
Channels 2.75¢
Bands—1 to 6 x 3-16 to No. 12 ₱ lb 2.70¢ @ 2.80¢
"Burden's Best" Iron, base price ₱ lb 3.00¢
Burden's "H. B. & S. Iron, base price ₱ lb 2.80¢
"Ulster" ₱ lb 3.00¢
Norway Bars 3.75 @ 4.25¢
Norway Shapes 4.25 @ 4.75¢

Merchant Steel from Store—

per lb
Open Hearth and Bessemer Machinery 2.50 to 2.60¢
Toe Calk, Tire and Sleigh Shoe $3.00@3.25¢
Best Cast Steel, base price in small lots 7 ¢
Best Cast Steel Machinery, base price in small lots 5 ¢

Soft Steel Sheets—

¼ inch	3.00¢	No. 14	3.20¢
3-16 inch	3.10¢	No. 16	3.30¢
No. 8	3.10¢	No. 18	3.35¢
No. 10	3.10¢	No. 20	3.40¢
No. 12	3.15¢	No. 22	3.45¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₱ lb, 3.00	3.20¢
Nos. 17 to 21	₱ lb, 3.10	3.30¢
Nos. 22 to 24	₱ lb, 3.20	3.40¢
Nos. 25 and 26	₱ lb, 3.30	3.50¢
No. 27	₱ lb, 3.40	3.60¢
No. 28	₱ lb, 3.50	3.70¢

Russia, Planished, &c.

Genuine Russia, according to assortment ₱ lb 10½¢
Patent Planished ₱ lb A, 9½¢; B, 8½¢, net.
Patent Planished Sheet Steel ₱ lb 8½¢

Galvanized.

	B. B.
Nos. 10 to 16	₱ lb, 12¢
Nos. 17 to 21	₱ lb, 13¢
Nos. 22 to 24	₱ lb, 14¢
Nos. 25 to 26	₱ lb, 15¢
No. 27	₱ lb, 16¢
No. 28	₱ lb, 17¢
No. 29	₱ lb, 19¢
No. 30	₱ lb, 21¢

30 in. 1¢ ₱ lb higher. 67½&5%70% off.

Foreign Steel from Store—

Best Cast	₱ lb 14 ¢
Extra Cast	₱ lb 16½ @ 17 ¢
Swaged, Cast	₱ lb 16 ¢
Best Double Shear	₱ lb 14 ¢
Blister, 1st quality	₱ lb 12 ¢
German Steel, Best	₱ lb 10 ¢
2d quality	₱ lb 9 ¢
3d quality	₱ lb 8 ¢
Sheet Cast Steel, 1st quality	₱ lb 14 ¢
2d quality	₱ lb 13 ¢
3d quality	₱ lb 11 ¢
R. Mushet's "Special"	₱ lb 46 ¢
" " " Annealed	₱ lb 75 ¢
" " "Titanic"	₱ lb 19 ¢
Hobson's Choice XX Extra Best	₱ lb 35 ¢
Jessop Self Hardening	₱ lb 40 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson Self-Hardening	₱ lb 40 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free. Per lb
Banca, Pigs 34½¢
Straits, Pigs 33½¢
Straits in bars 34½¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20 $6.75@7.00
IX, 14 x 20 8.25@8.50
Meiyn Grade:
IC, 14 x 20 6.50
IX, 14 x 20 7.75
Allaway Grade:
IC, 14 x 20 5.75
IX, 14 x 20 6.75

American Coke Plates—Bessemer—

IC, 14 x 20 108 lb $5.00@5.10
IX, 14 x 20 5.75@6.10
IXX, 14 x 20 7.10@7.20

American Terne Plates—

IC, 20 x 28 $9.75@10.50
IX, 20 x 28 11.75@12.50

Tin Boiler Plates, American—

IXX, 14 x 26 112 sheets $12.70
IXX, 14 x 28 112 sheets 13.65
IXX, 14 x 31 112 sheets 15.10

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₱ lb.

Ingot—

Lake 19½¢
Ansonia grade Casting 18½¢

Sheet and Bolt—

February 2, 1899. Prices, in cents per pound. Sheet 30 x 60. Net.

Not wider than	Not longer than	And longer than	64 oz. & over, galv. sheet, 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 30 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	13 oz. and 13 oz. 9¾ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	22½	22½	22½	22½	23½	24½	25½	28½	31½
30	96	72	22½	22½	22½	22½	23½	25½	28½	31½	
30	.....	96	22½	22½	22½	22½	24½	25½			
36	72	.....	22½	22½	22½	23½	26½	29½	32½		
36	96	72	22½	22½	22½	24½	26½	31½			
36	120	96	22½	22½	22½	23½	25½				
36	.....	120	22½	22½	23½	24½					
48	72	.....	22½	22½	23½	24½	26½	29½	32½		
48	96	72	22½	22½	23½	25½	27½	32½			
48	120	96	22½	22½	24½	26½	30½				
48	.....	120	22½	23½	25½	28½					
60	72	.....	22½	23½	23½	25½	28½	33½			
60	96	72	22½	22½	24½	25½	31½				
60	120	96	22½	23½	25½	28½					
60	132	120	22½	24½	26½	30½					
72	96	.....	22½	23½	25½	30½					
72	144	96	22½	24½	27½	32½					
72	.....	144	23½	25½	30½						
108	120	.....	23½	25½	31½						
108	.....	120	25½	28½							
wider than 108	144	.....	26½	28½							
	.....	144	27½	30½							

Bolt Copper, ⅜ inch diameter and over, ₱ lb 2½¢
Circles, Segments and Pattern Sheets, 3¢ ₱ lb advance over price of sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₱ square foot and heavier, 1¢ ₱ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₱ square foot, 2¢ ₱ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₱ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₱ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₱ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₱ lb	26½¢
12 oz. and up to 14 oz. to square foot, ₱ lb	27½¢
10 oz. and up to 12 oz., ₱ lb	29½¢
Lighter than 10 oz., ₱ lb	31½¢
Circles less than 8 in. diameter, 2¢ ₱ lb addition.	
Circles over 13 in. diameter are not classed as Copper Bottoms.	

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8	9 and 10	11 and 12
	20¢	20½¢	20½¢
Nos.	13	14	15	16
	20½¢	20½¢	21¢	21½¢
Nos.	17	18	19	20
	21½¢	22¢	22½¢	22¾¢

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	⅛	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛	1⅓
4-11	3- 9	...	.....	.....	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	76	51	46	43	41	40	39	38	37	36	35	34
22	21	77	56	48	44	42	41	40	39	38	37	37	36
23	22	78	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₱ lb additional

Iron Pipe Sizes—Brass

	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
	36	32	29	27	27	21	21	21	21	21	21	21	25	27	27	28¢ ₱ lb

Copper, Bronze or Gilding Tubes, 3¢ ₱ lb additional

Brazed Brass Tubing.

(To No. 19, inclusive.) Feb. 28 1896
Brown & Sharpe's gauge standard.

Per lb.
Plain Round Tube, ⅛ in. up to 2 in. $0.35
" " ⅛ " ⅛ " .36
" " ⅛ " ⅛ " .38
" " ⅛ " ⅛ " .41
" " 5-16 " ⅛ " .48
" " ¼ " 5-16 " .65
" " 3-16 " ¼ " 1.00
" " ⅛ " 3-16 " 1.50
Smaller than ⅛ inch Special
3 inch and larger .40
Over 3 inch to 3½ inch, inclusive .45
Over 3½ inch .50
Bronze and Copper, advance on Brass List, 3 cents.
Discount from list ¾ 20@25%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass Wider than and including	⅛ in. 12	¼ in. 12	⅜ in. 14	½ in. 16	⅝ in. 18	¾ in. 20	⅞ in. 22	1 in. 24
To No. 20, inclusive	.32	.33	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.32	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.33	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.33	.25	.26	.30	.32	.34	.36	.39

Common High Brass. Wider than and including	26 in. 28	28 in. 30	30 in. 32	32 in. 34	34 in. 36	36 in. 38	38 in. 40	40 in.
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add ½¢ ₱ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List 10%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gilding bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 10%; Copper Wire, NET.
List November 16, 96.
Spring Wire, 2¢ ₱ lb advance.

Spelter—Duty: In Blocks or Pigs, 1¢ ₱ lb

Western Spelter 6½¢

Zinc.

Duty: Sheet, 2¢ ₱ lb.

600 lb casks 8¼¢ | Per lb 8¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₱ lb. Pipe and Sheets, 2½¢ ₱ lb.

American Pig 5@5½¢
Bar 5¾¢
Pipe (full lengths), subject to discount 20% 6¼¢
Pipe (cut lengths), subject to discount 20% 7¼¢
Tin Lined Pipe, subject to discount 20% 12½¢
Block Tin Pipe, subject to discount 20% 4¢
Sheet (full rolls) subject to discount 20% 7¾¢
Sheet (cut rolls (subject to discount 20% 8¾¢
Old Lead in exchange, 4¢ ₱ lb.

Solder.

½ & ¼, guaranteed 21@21½¢
No. 1 18@19½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₱ lb.

Cookson	₱ lb 11½¢
Hallett's	₱ lb 10¾¢
U. S.	₱ lb 10¾¢

Aluminum—

Duty: Crude, 8¢ ₱ lb. Plates, Sheets, Bars and Rods 13¢ ₱ lb.

No. 1 Aluminum (guaranteed over 99.75% pure), in ingots for remelting:
Small lots ₱ lb 37¢
100-lb lots ₱ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots ₱ lb 34¢
100-lb lots ₱ lb 33¢
Special casting Alloy, containing over 80% pure Aluminum: Small lots ₱ lb 35¢ | 100-lb lots ₱ lb 30¢
Aluminum Sheet, B. & S. gauge, 50 lb or more.

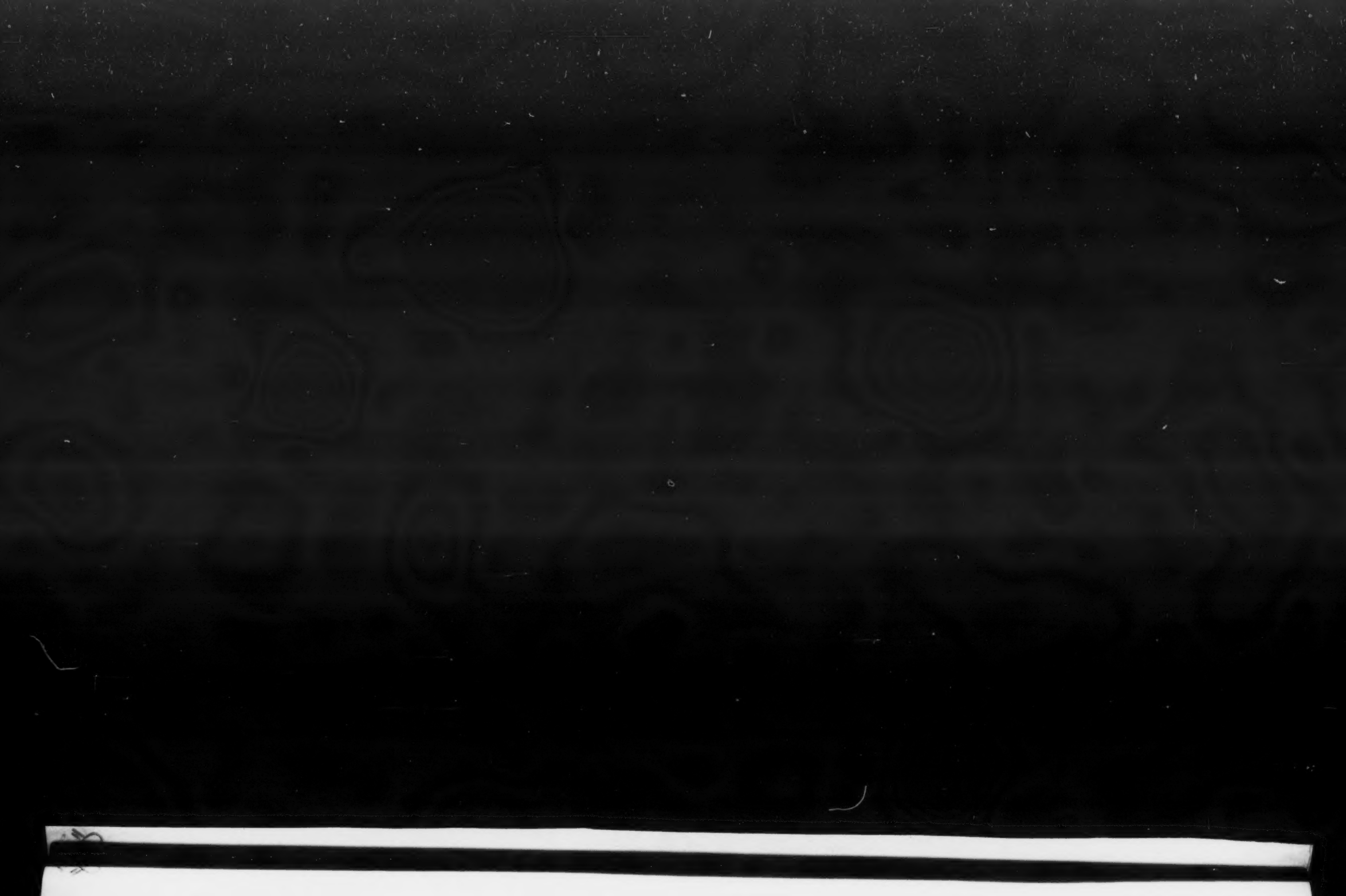
Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₱ lb.	₱ lb.	₱ lb.
Nos. 13 to 19	$0.40	$0.42	$0.45
No. 20	.42	.44	.47
Nos. 21 to 23	.44	.46	.49
No. 24	.44	.48	.51
No. 25	.45	.49	.53
No. 26	.45	.52	.57
No. 27	.46	.55	.60
No. 28	.46	.55	.62
No. 29	.47	.58	.67
No. 30	.48	.62	.75

Note.—Lots of less than 50 lb 5¢ ₱ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₱ lb 40¢	No. 15	₱ lb 43¢
No. 9 to No. 10	₱ lb 40½¢	No. 17	₱ lb 50¢
No. 11	₱ lb 41 ¢	No. 18	₱ lb 55¢
No 12	₱ lb 41½¢	No. 19	₱ lb 60¢
No. 13	₱ lb 44 ¢	No. 20	₱ lb 65¢
No 14	₱ lb 4 2½¢	No. 21	₱ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₱ lb 14¾¢
Light and Tinned Copper	₱ lb 14 ¢
Heavy Brass	₱ lb 10¾¢
Light Brass	₱ lb 8¾¢
Lead	₱ lb 4 ¢
Tea Lead	₱ lb 3¾¢
Zinc	₱ lb 4¾¢
No. 1 Pewter	₱ lb 17½¢
No. 2 Pewter	₱ lb 10 ¢
Tin Plate Scrap	₱ ton $3.50
Wrought Scrap Iron	₱ gross ton $10.50
Heavy Cast Scrap	₱ gross ton $9.50
Stove Plate Scrap	₱ gross ton $6.50
Burnt Iron	₱ gross ton $4.50